RouteFinder® SOHO

SOHO Security Appliance

EDGE Models
RF825-E, RF825-E-AP
CDMA Models
RF825-C-Nx, RF825-C-Nx-AP

User Guide

MultiTech® Systems

RouteFinder SOHO Security Appliance

User Guide

Models: EDGE Models
RF825-E, RF825-E-AP
CDMA Models
RF825-C-Nx, RF825-C-Nx-AP

Document Product Number S000422B, Revision B

Copyright © 2007-2009

This publication may not be reproduced, in whole or in part, without prior expressed written permission from Multi-Tech Systems, Inc. All rights reserved.

Multi-Tech Systems, Inc. makes no representations or warranty with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Furthermore, Multi-Tech Systems, Inc. reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of Multi-Tech Systems, Inc. to notify any person or organization of such revisions or changes.

Revision	Date	Description
A	06/19/07	Initial release. Software version 1.30
B	10/31/07	Software version 1.40
	05/04/09	Added a link to the Multi-Tech Web site for the Warranty Statement.

Warranty

For Warranty information, see the Multi-Tech Web site at http://www.multitech.com

Patents

This device is covered by one or more of the following U.S. Patent Numbers: 6,219,708; 5,301,274; 5,309,562; 5,355,365; 5,355,653; 5,452,289; 5,453.986.

Trademarks

The Multi-Tech logo, *RouteFinder*, and *SocketModem* are registered trademarks of Multi-Tech Systems, Inc.

World Headquarters

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, Minnesota 55112
Phone: 763-785-3500 or 800-328-9717
Fax: 763-785-9874
Internet Address: http://www.multitech.com

Technical Support

Country	By Email	By Phone
Europe, Middle East, Africa	support@multitech.co.uk	+(44) 118 959 7774
U.S., Canada, all others	support@multitech.com	(800) 972-2439 or +763-717-5863

Contents

Chapter 1 – Introduction and Product Description 6
Features 6
Key Features 6
Feature Details 7
RouteFinder Ship Kit Contents 8
RouteFinder Documentation 8
Safety Warnings 9
Ethernet Ports Caution 9
Handling Precautions 9
Front and Back Panels 10
CDMA Front Panel 10
EDGE Front Panel 10
Front Panel LEDs and Other Features 10
Signal Strength LEDs Reference Chart 11
CDMA & EDGE Back Panel 12
CDMA-AP & EDGE-AP Back Panel 12
Back Panel Connectors 12
Application Example 13
RF825-AP Specifications 14
CDMA Specifications 15
EDGE Specifications 15
Specifications for 802.11b/g Interface 16
Chapter 2 – Cabling the RouteFinder 17
RF825 Cabling 17
RF825-AP Cabling 18
Chapter 3 – Setting Up a Workstation and a Wireless Account 19
Establishing TCP/IP Communication 19
Obtaining & Activating a Wireless Account 21
How Connect to the Internet Through the Wireless Provider's Service 21
To Disable Your Cellular Connection 23
Additional Configuration of the Cellular Modem 23
Command Examples 24
Chapter 4 – Configuring the RouteFinder 25
Starting the RouteFinder 25
Open a Web Browser 25
Login 25
Web Management Software Opens 26
Navigating the Screens 26
Menu Bar 26
Sub-Menus 27
Table of Menus and Sub-Menus 27
Basic Configuration Using the Setup Wizard 28
Use the Wizard Setup for Quick Configuration 28
Benefits of Using the Wizard Setup 28
Save & Restart Button Under Menu Bar 33
Chapter 5 – Using the RouteFinder's Web Management Software 34
Administration 34

Administration > System Setup *34*
Administration > Administrative Access *36*
Administration > System Logs *38*
Administration > Remote Syslog *38*
Administration > SNTP Client *39*
Administration > Tools *41*
Administration > Factory Defaults *42*
Networks & Services 43
Networks & Services > Network Configuration *43*
Networks & Services > Service Configuration *45*
Network Setup 47
Network Setup > IP Settings *47*
Network Setup > Wireless LAN *50*
Network Setup > Wireless LAN > WLAN Security *51*
Network Setup > Wireless LAN > WLAN Client Filter *54*
Network Setup > Advanced IP Settings *55*
Network Setup > PPP Cellular/Analog Backup *56*
Network Setup > Dynamic DNS *58*
Network Setup > Static Routes *60*
Network Setup > IP Masquerading *60*
Network Setup > SNAT *61*
Network Setup > DNAT *62*
Packet Filters 63
Packet Filter > Packet Filter Rules *63*
Packet Filters > Advanced Filters *65*
Packet Filter > ICMP *66*
Packet Filter > Packet Filter Log *66*
VPN (Virtual Private Network) 67
VPN > IPSec *67*
Introduction to Virtual Private Networks *67*
VPN > PPTP *72*
Proxy 74
Proxy > HTTP Proxy *74*
Proxy > Custom Filters *75*
Proxy > DNS Proxy *76*
DHCP Server 77
DHCP Server > LAN Subnet Settings *77*
DHCP Server > LAN Fixed Addresses *78*
DHCP Server > WLAN Subnet Settings and WLAN Fixed Addresses *78*
Utilities 79
Utilities > Backup *79*
Utilities > Firmware Upgrade *79*
Statistics & Logs 80
Statistics & Logs > System Information *80*
Statistics & Logs > Network Interface Details *81*
Statistics & Logs > Packet Filter Log *81*
Statistics & Logs > IPSec Live Log *82*
Statistics & Logs > PPTP Live Log *82*
Statistics & Logs > DHCP Server Live Log *82*
Statistics & Logs > PPP Cellular/Analog Log *83*
Statistics & Logs > WLAN Client Live Log *83*
Statistics & Logs > Log Traces *84*

Chapter 6 – Troubleshooting 85

RouteFinder Troubleshooting 85
CDMA Troubleshooting 87
EDGE Troubleshooting 87

Chapter 7 – Frequently Asked Questions 88
RouteFinder FAQs 88
EDGE FAQs 90
CDMA FAQs 90

Appendix A – Table of Commonly Supported Subnet Addresses 91

Appendix B – Antenna for the Wireless RouteFinder 93
The Access Point Antenna 93
Antenna Electrical Characteristics 93
Mechanical 93
Environmental 93
The Wireless Antenna 94
GSM, EDGE, and CDMA Antenna 94
GSM and E-GSM Radio Characteristics 94
CDMA Radio Characteristics 94
Antenna 94

Appendix C – Waste Electrical and Electronic Equipment Directive (WEEE) 95

Glossary 96

Index 102

Chapter 1 – Introduction and Product Description

Welcome to the world of Internet security. Your Multi-Tech RouteFinder SOHO Internet security appliance, model RF825-C/E, and the RouteFinder wireless Internet security appliance, model RF825-C/E-AP, are ideal for the small office or home office (SOHO) that needs secure access to a corporate LAN.

The RF825 CDMA/EDGE-AP builds offer secure 802.11b/g Wi-Fi® wireless connectivity.

Features

Key Features

- One WAN Ethernet port connects to a DSL or cable modem for shared Internet access.
- Secure 802.11b/g wireless connectivity option (AP models).
- WEP, WPA, WPA2, TKIP, and AES wireless security (AP models).
- Supports IPSec VPN tunnels and PPTP tunnels for secure LAN-to-LAN and Client-to-LAN access over the Internet.
- 3DES and AES encryption.
- Shared Internet access via PPPoE, DHCP, or static IP.
- Integrated cellular EDGE or CDMA 1xRTT modem connectivity for automatic dial-backup if your broadband connection goes down.
- Built-in 4-port 10/100M bps switch.
- Stateful Packet Inspection firewall with packet filter rules, DNAT, SNAT, and IP MASQUERADE.
- Built-in dynamic DNS client.
- Supports VPN tunneling using FQDN.
- Protects your LAN against Denial of Service (DoS) attacks.
- Network monitoring via Syslog allows network administrator to view all incoming and outgoing packets, status of connections and specific connection events.
- Configuration and management using any Web browser.
- Internet access control tools provide client and site filtering.
- Traffic monitoring and reporting.
- Flash memory of easy updates.
- IP address mapping/port forwarding.
- Two-year warranty.

Feature Details

- **Secure VPN Connections.** The RouteFinder SOHO security appliance uses the IPSec or PPTP industry standard protocol, data encryption, and the Internet to provide high-performance, secure VPN connections. For LAN connectivity, the RouteFinder SOHO security appliance utilizes the IPSec protocol to provide up to 15 tunnels with strong 3DES or AES encryption using IKE and PSK key management. For Client-to-LAN connectivity, Multi-Tech provides optional IPSec client software allowing road warriors secure access to the company's internal network.

  This RouteFinder also supports remote users who want to use the PPTP VPN client built into the Windows operating system. This provides 40-bit or 128-bit encryption, user name and password authentication.
- **Connect Multiple Users to the Internet with Broadband Speed.** With the RouteFinder SOHO security appliance, multiple users can share access to the Internet with only one IP account. The WAN Ethernet port(s) support DSL or cable speeds of up to 20M bps.
- **Wi-Fi Connectivity Option.** The RouteFinder SOHO AP models provide secure wireless 802.11b/g high-speed wireless connectivity for even greater flexibility and use. With Wi-Fi Protected Access™ 2 (WPA2), the RouteFinder SOHO security appliance offers the highest available security for wireless traffic. In addition, it engages wireless firewalling to provide control over the communications between the appliance and connecting clients as well as providing your guests and customers with wireless Internet-only access.
- **Cellular Wireless Connectivity Options.** The RouteFinder SOHO security appliance RF825 models provide an integrated cellular EDGE or CDMA 1xRTT modem to be used as your primary Internet connection, or as a back-up to a wired connection. With packet data rates up to 240K bps for EDGE modems, and up to 153.6K bps for CDMA modems, the RouteFinder RF825 security appliance is ideal for mobile applications or as a temporary connection during a LAN/WAN failure.
- **Built-in 10/100 Switch.** The integrated 4-port 10/100M bps switch eliminates the need for an additional hub or switch to connect users not on a LAN. It ensures high-speed transmission and can serve as a completely dedicated full duplex backbone.
- **Network Security.** The RouteFinder SOHO appliance provides network layer security utilizing Stateful Packet Inspection, the sophisticated firewall technology found in large enterprise firewalls, to protect the network against intruders and Denial of Service (DoS) attacks. It also uses Network Address Translation (NAT) to hide internal, non-routable IP addresses and allows internal hosts with unregistered IP addresses to function as Internet-reachable servers.
- **Virtual Server Support.** In addition to providing shared Internet access, the RouteFinder SOHO security appliance can support a Web, FTP or other Internet servers. Once configured, it accepts only unsolicited IP packets addressed to the Web, FTP or other specified servers.
- **Dynamic DNS Client.** The RouteFinder SOHO security appliance has a built-in Dynamic DNS client that is compatible with *DynDNS.org*. It automatically sends an update to the *DynDNS.org* update server if the WAN IP address changes. A registered Dynamic DNS account allows you to host your own Web site, mail server, or other services on the Internet without having to obtain a static IP address or keep track of a dynamic IP address. It also aids in creating static-to-dynamic or dynamic-to-dynamic IPSec VPN tunnels. In addition, with a Dynamic DNS account, you can establish a PPTP VPN tunnel behind the RouteFinder SOHO security appliance by configuring your PPTP client to connect to *yourhostname.dydns.org* instead of a dynamic IP address.
- **Fully Qualified Domain Name (FQDN) Feature.** The FQDN featured on the RouteFinder SOHO security appliance allows you to utilize a static name in the IPSec VPN setup, like *"branchoffice.dyndns.org"*, instead of a dynamic IP address, to create static-to-dynamic or dynamic-to-dynamic VPN IPSec tunnels. This allows all of the IPSec VPN connections to act like static-to-static connections. The RouteFinder SOHO security appliance checks the FQDN IPSec configuration every two minutes for IP address changes. If the IP address is different than the last time it checked, it drops the current tunnel and creates a new one. This helps to keep IPSec VPN tunnels readily available with minimal interruptions in data communication.

- **Optional VPN Client Software.** Multi-Tech provides easy-to-use IPSec VPN client software that transparently secures Internet communications anytime, anywhere. VPN client software is ideal for business users who travel frequently or work from home providing secure remote access through the RouteFinder security appliance for applications such as remote access, file transfer, e-mail, Web browsing, messaging or IP telephony. Encryption and authentication operations are completely transparent to the end user. In general, IPSec provides stronger encryption than PPTP resulting in better overall security. A 30-day free trial CD is included with the RouteFinder SOHO security appliance.
- **RouteFinder All-in-one Security Appliance.** Multi-Tech's next generation RouteFinder all-in-one security appliance is designed to maximize network security without compromising network performance. It offers an ICSA-certified Stateful Packet Inspection firewall for the ultimate in firewall security. It also provides optional e-mail anti-virus protection and content filtering, as well as free spam filtering. In addition, it provides secure IPSec and PPTP VPN connections to securely connect telecommuters, remote offices, customers, or suppliers to the corporate office. Go to www.multitech.com/products for more details.

RouteFinder Ship Kit Contents

The RouteFinder ship kit contains the following items:

- One RF825 RouteFinder
- Power Supply
- RJ45 Ethernet Cable
- 2.4 GHz 5dBi SWI-Reverse-F Swivel Access Point Antenna (included with Wi-Fi® models only)
- 2dBi Cellular Antenna (not included with all models)
- The Quick Start Guide
- A CD with a 30-day evaluation copy of IPSec VPN Client software (not the full working version)
- One RouteFinder CD which contains RouteFinder documentation and Adobe Acrobat Reader

If any of the items is missing or damaged, please contact Multi-Tech Systems, Inc.

RouteFinder Documentation

Quick Start Guide

The Quick Start Guide is a shorter version of this User Guide. The Quick Start is included in printed form with your RouteFinder. The guide provides the necessary information for a qualified person to unpack, cable, and configure the device for proper operation.

User Guide

The User Guide can be installed from the RouteFinder CD by clicking Install Manuals on the Installation screen or downloading the file from our Web site at: http://www.multitech.com

AT Commands

AT commands for the CDMA and EDGE wireless modem are published in separate Reference Guides and included on the RouteFinder CD as well as being posted on the Multi-Tech web site.

SIM commands for EDGE are included in the *EDGE AT Commands Reference Guide.*

Safety Warnings

Ethernet Ports Caution

The Ethernet ports are **not** designed to be connected to a Public Telecommunication Network.

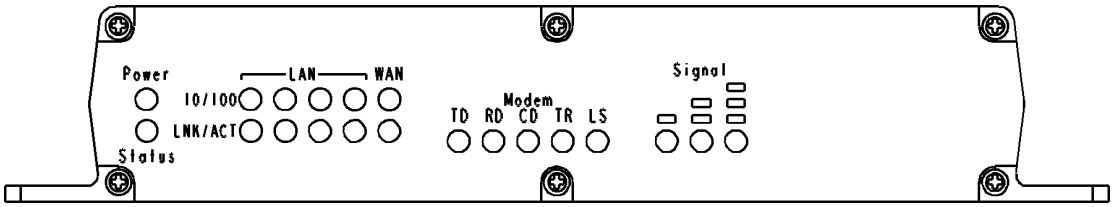
Handling Precautions

All devices must be handled with certain precautions to avoid damage due to the accumulation of static charge. Although input protection circuitry has been incorporated into the devices to minimize the effect of this static build up, proper precautions should be taken to avoid exposure to electrostatic discharge during handling and mounting.

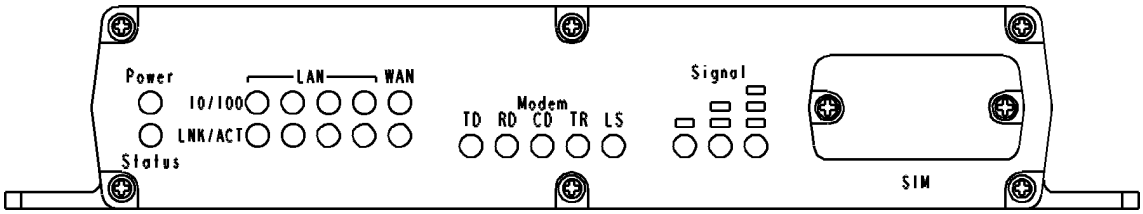
Caution: Maintain a separation distance of at least 20 cm (8 inches) between the transmitter's antenna and the body of the user or nearby persons. The modem is not designed for, nor intended to be, used in applications within 20 cm (8 inches) of the body of the user.

Front and Back Panels

CDMA Front Panel



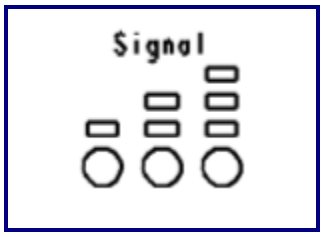
EDGE Front Panel



Front Panel LEDs and Other Features

LEDs	Description
Power	Lights when power is being supplied to the RouteFinder.
Status	When functioning normally, the LED blinks. The LED is a solid light when the RouteFinder is booting up, saving the configuration, restarting, or updating the firmware.
LAN10/100M	Lights when a successful connection to the 100BaseT LAN is established. Off when connected to the 10BaseT.
LAN Link / ACT	Lights when the LAN port has a valid Ethernet connection. Blinks when it is receiving or transmitting data.
WAN 10/100M	Lights when a successful connection to the 100BaseT WAN is established. Off when connected to the 10BaseT.
WAN Link / ACT	Lights when the WAN port has a valid Internet connection. Blinks when it is receiving or transmitting data.
Modem	**TD** **TRANSMIT DATA.** This LED blinks when the modem is transmitting data to your wireless carrier. **RD** **RECEIVE DATA.** This LED blinks when the modem is receiving data from your wireless carrier. **CD** **CARRIER DETECT.** This LED lights when the modem detects a valid carrier signal from a wireless carrier. **TR** **(DATA) TERMINAL READY.** This LED lights when the modem is trying to establish a wireless connection. **LS** **LINK STATUS.** **EDGE:** This LED blinks when there is network activity between the carrier and the cellular module. At all other times, the light will be off. **CDMA:** **Continuous "on" state** indicates the wireless modem is not registered on the network. **Flashing state** indicates registration on network. **Off state**. Modem is off (not ready) or in download mode.
Signal	Indicates the wireless signal strength. See the Signal Strength Chart on the next page.
SIM	(For EDGE only) Location of the SIM card.

Signal Strength LEDs Reference Chart



Signal Strength AT Commands:

The EDGE query signal strength command is: **AT+CSQ**
Response Example: +CSQ: xx, 99 **(**For *xx*, see the values chart below)

The CDMA query signal strength command is: **AT+CCED**
Response Example: +CSQ:16, 99
+CCED:0,0,384,26,2,6,104,2513,2,17,xx,-45,-63 **(**For *xx*, see the values chart)

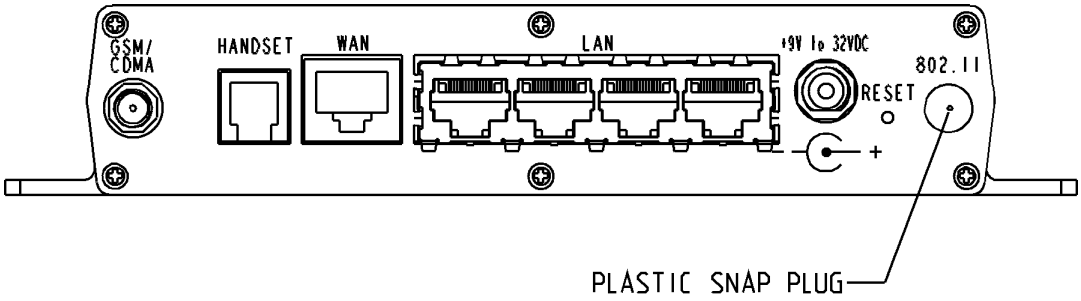
Definition of xx Values

The following table lists the xx values and explains how they correspond to the number of LEDs lit for signal strength.

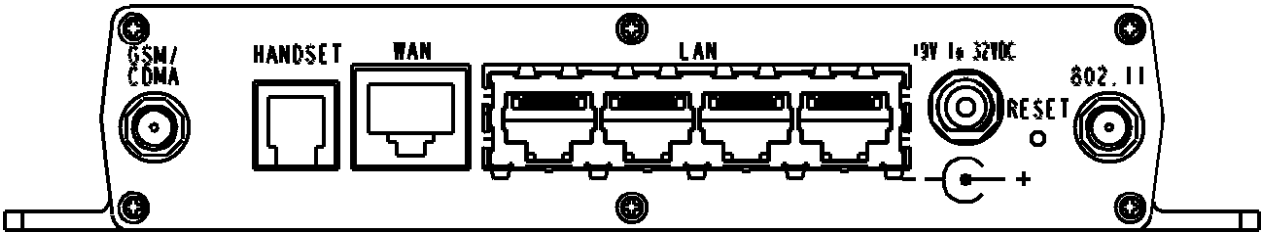
AT+CSQ xx Values	Signal Strength LED Bars	Signal Strength
0 to 6	No LEDs are lit	Very weak signal
7 to 14	1 Bar LED is lit	Weak signal
15 to 23	1 Bar and 2 Bar LEDs are lit	Stronger signal
24 to 31	1 Bar, 2 Bar, 3 Bar LEDs are lit	Strongest signal

AT+CCED xx Values	Signal Strength LED Bars	Signal Strength
-113 to -101	No LEDs are lit	Very weak signal
-99 to -85	1 Bar LED is lit	Weak signal
-83 to -67	1 Bar and 2 Bar LEDs are lit	Stronger signal
-65 to -51	1 Bar, 2 Bar, 3 Bar LEDs are lit	Strongest signal

CDMA & EDGE Back Panel



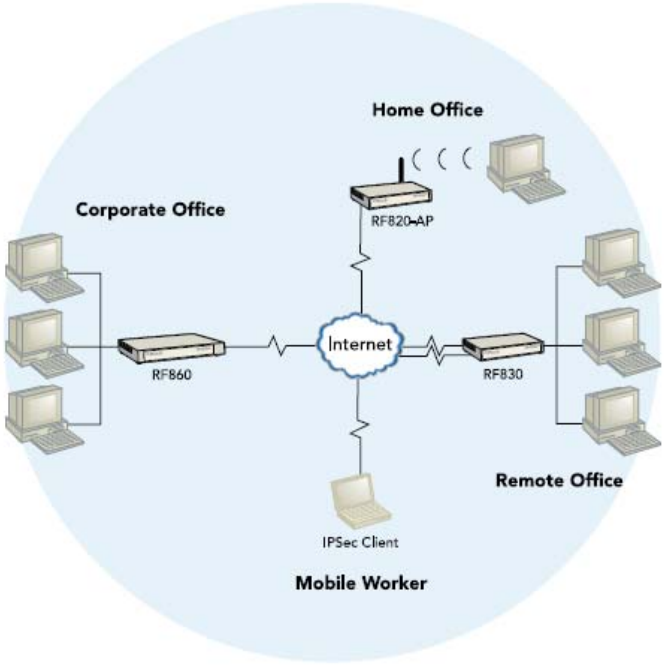
CDMA-AP & EDGE-AP Back Panel



Back Panel Connectors

Connector	Description
GSM/CDMA Antenna Connector	Connector for the 2 dbi cellular antenna. **Note:** The antenna must be attached in order for the RouteFinder to be operational.
Handset	Connector for a handset.
WAN	The WAN (10/100BaseT) port connects the DSL modem or cable modem.
LAN Ports	There are 4 LAN ports. You can connect to PCs, FTP servers, printers, or other devices you want to put on your network.
+9 Volt to 32VDC	RouteFinder power source can range from 9 volts to 32VDC.
Reset	The Reset button resets the RouteFinder to its factory defaults. Press and hold the Reset button until the Status LED blinks, and then release it. Do not press this button unless you want to restore all settings to the factory defaults.
802.11	2.4 GHz 5dBi SWI-Reverse-F antenna connector. **Note:** the antenna must be attached in order for the AP to be operational.

Application Example



RF825-AP Specifications

These specifications are for the RF825-AP.

Specifications	Description
Standards	10/100BaseT
Ethernet Ports	**LAN:** 4 Ports 10/100BaseT **WAN:** 1 Port 10/100BaseT
Recommended Network Users	25
Firewall	Stateful Packet Inspection Network Address Translation (NAT) Filtering (Port Number & IP Address) Virtual Server Denial of Service Protection (DoS) Firewall Throughput (20M bps)
VPN	Remote User (Client-to-LAN), IPSec and PPTP Branch Office (LAN-to-LAN), IPSec 3DES/AES Encryption Encryption Throughput (3M bps) VPN Using FQDN Recommended VPN Tunnels: Up to 15
Other Features	Web-Based (HTTP) Email Alerts Syslog Intrusion Logging WEP, WPA, WPA2, TKIP, AES (RF825-AP) Automatic Dial-Backup Integrated EDGE Modem (RF825-E & RF825-E-AP) Integrated CDMA Modem (RF825-C & RF825-C-AP) PPPoE DHCP Client/Server Built-in Dynamic DNS Client Multiple Public IPs on WAN
Power	**Power Supply** **Input:** 100 ~240V, 0.5A 50-60- Hz **Output:** 9VDC, 1.7A **Power Consumption** The maximum power consumption is 0.95A at 9V.
Dimensions	6.4" w x 1.2" h x 6" d (16.3 cm x 3.0 cm x 15.2 cm)
Weight	1.25 lbs. (56 kg.)
Operating Temperature	+32° to +113° F (0° to 45° C)
Humidity	25–85% non-condensing
Certifications and Approvals	CE Mark FCC Part 15 (Class B) UL 60950
Warranty	2 years

CDMA Specifications

The SocketModem CDMA meets the following specifications:

Category	*Description*
Standard	CDMA2000 1xRTT
Bandwidth	Dual-band 800/1900 MHz CDMA
Data Speed	Serial interface supporting DTE speeds to 230K Packet data up to 153.6K bps forward and reverse channels Circuit-switched data up to 14.4K bps

EDGE Specifications

The SocketModem EDGE meets the following specifications:

Category	Description
Standards	**EDGE:** E-GPRS Class 10 **GPRS:** GPRS Class 12
Data Speed	Packet Data rates up to 240K bps (modulation & coding scheme, MCS 1-9, Mobile station Class B) Circuit-switched data up to 14.4K bps non-transparent mode, asynchronous
Bandwidth	Quad-band 850/900/1800/1900 MHz

Specifications for 802.11b/g Interface

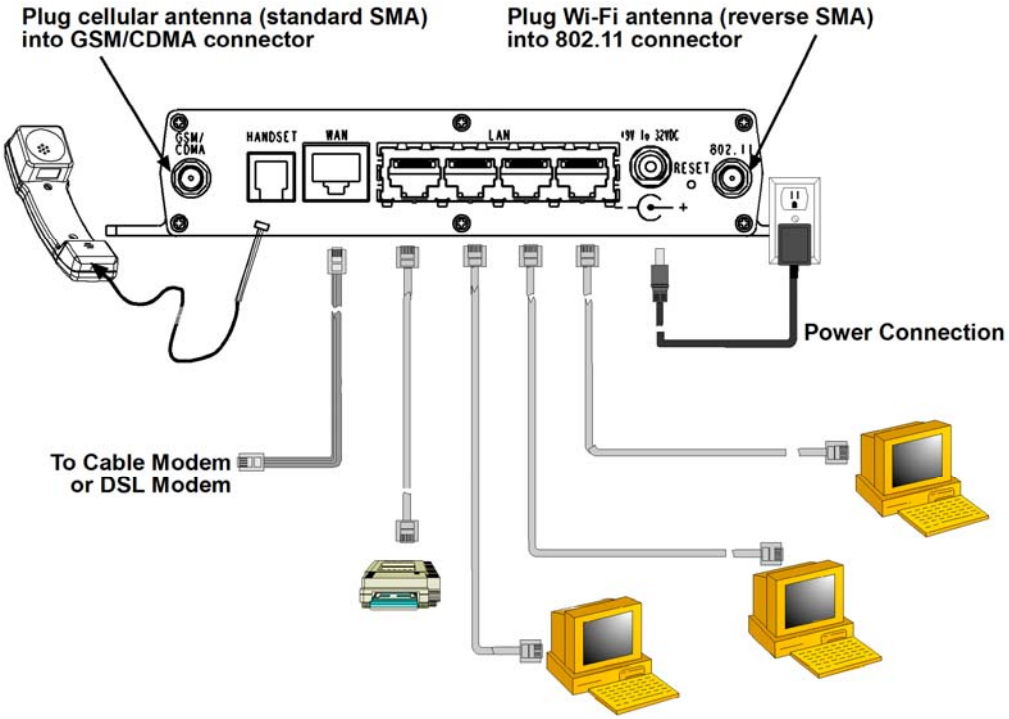
Specifications	Description
Network Standards	IEEE 802.11b IEEE 802.11g
Frequency Band	2.400-2.4835GHz
Data Rate	**IEEE 802.11b (auto-fallback):** • CCK: 11, 5.5 Mbps • QPSK: 2 Mbps • BPSK: 1 Mbps **IEEE 802.11g (auto-fallback):** • OFDM: 54, 48, 36, 24, 18, 12, 9 and 6 Mbps
Media Access Control	CSMA/CA with ACK
Channel	**IEEE 802.11b** Ch. 1 to 11 – North America Ch. 1 to 14 – Japan Ch. 1 to 13 – Europe ETSI Ch. 10 to 11 – Spain Ch. 10 to 13 – France **IEEE 802.11g** Ch. 1 to 11 – North America Ch. 1 to 13 – Japan Ch. 1 to 13 – Europe ETSI Ch. 10 to 11 – Spain Ch. 10 to 13 – France
Transmission	IEEE 802.11b (DSSS) IEEE 802.11g (OFDM)
Modulation	**IEEE 802.11b (DSSS)** CCK @ 11.1.1 Mbps QPSK @ 2 Mbps BPSK @ 1 Mbps **IEEE 802.11g (OFDM)** BPSK @ 6, 9 Mbps QPSK @ 12, 18 Mbps 16-QAM @ 24, 36 Mbps 64-QAM @ 48, 54 Mbps
Network Architecture	Infrastructure Mode
Antenna	SMA antenna connector
Output Power	**IEEE 802.11b** 11Mbps; 17.5 +/- 2 dBm **IEEE 802.11g** 54Mbps; 14.0 +/- 1 dBm
Receiver Sensitivity	11 Mbps CCK @ 8% PER = -80 dBm 54 Mbps OFDM @ 10% PER = -65 dBm
Range	Up to 400m outdoor operating range
Security	64/128-bit WEP, WPA, WPA2, TKIP, AES

Chapter 2 – Cabling the RouteFinder

To use your RouteFinder make the appropriate connections to PCs, a cable or xDSL modem, and AC power. For AP models, attach the antennas.

After your device is properly cabled, it must be configured. Basic cabling directions are included below. See Chapter 3 for basic configurations. See Chapter 4 for advanced configurations.

RF825 Cabling

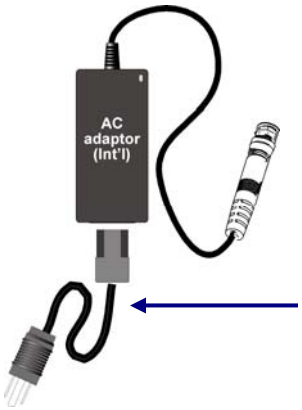
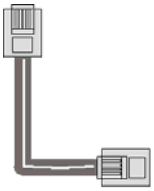


1. Turn the power off on all network devices (PCs, cable modems, DSL modems, analog modems, and the RouteFinder).
2. Plug one end of a RJ-45 cable into the Ethernet port on the PC and other into one of the LAN port on the RouteFinder. (If you have more than one PC, connect the others in the same way to the other LAN ports).
3. Connect the provided power supply cable to the 9 volt power port on the back of the RouteFinder, and plug the other end of the power supply into an AC power outlet as shown.
4. For the RF825-AP, attach the cellular antenna and the AP antenna. **Note:** Be sure to locate this appliance where there is wireless coverage.
5. If a DSL or cable modem is desired, connect a network cable from the DSL modem or cable modem to the WAN port on the RouteFinder.

RF825-AP Cabling

Follow the cabling procedures for RF825, and then attach the wireless antenna. See the Back Panel section earlier in this chapter for the location of the antenna connector.

Note: The antenna must be attached in order for the RouteFinder to be operational.

Antenna	Power Supply Cable	Ethernet Cable
	 This part of the power supply cable varies by the region of the world to which the product is shipped: NAM / EU / GB / IE	

Note: Units shipped with the universal AC power supply are not suited for installation in hazardous locations.

Chapter 3 – Setting Up a Workstation and a Wireless Account

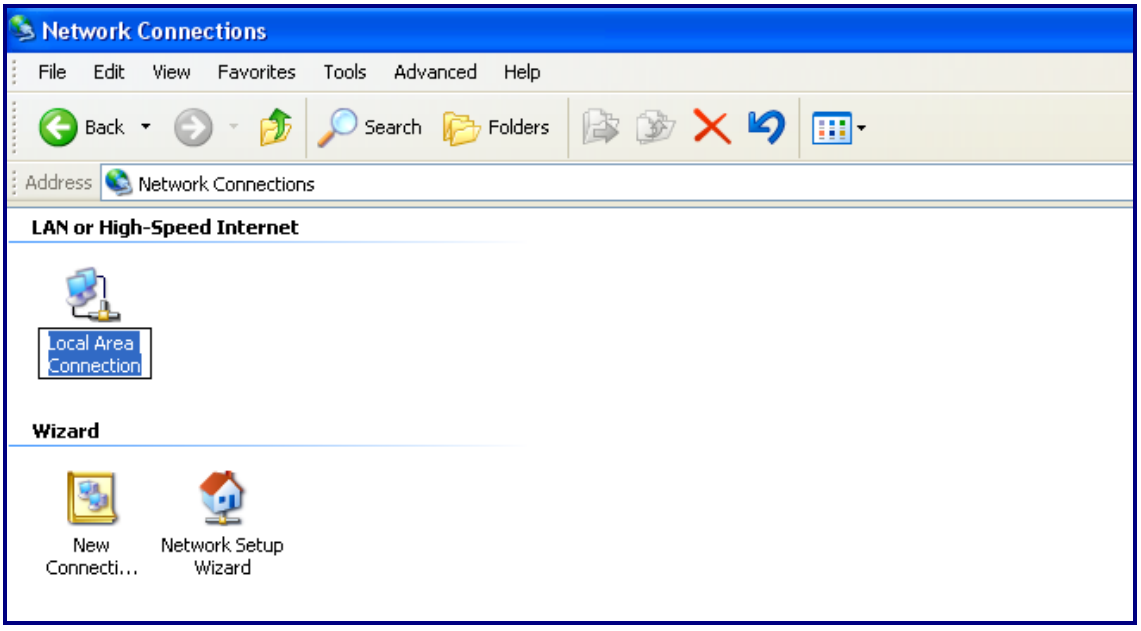
Establishing TCP/IP Communication

The following directions establish a TCP/IP connection at the workstation so the PC can communicate with the RouteFinder. The RouteFinders have built-in DHCP functionality, so you can set the PC to obtain a dynamic IP address. The following directions were written using a Windows 2000+ / XP operating system.

Obtaining a Dynamic IP Address

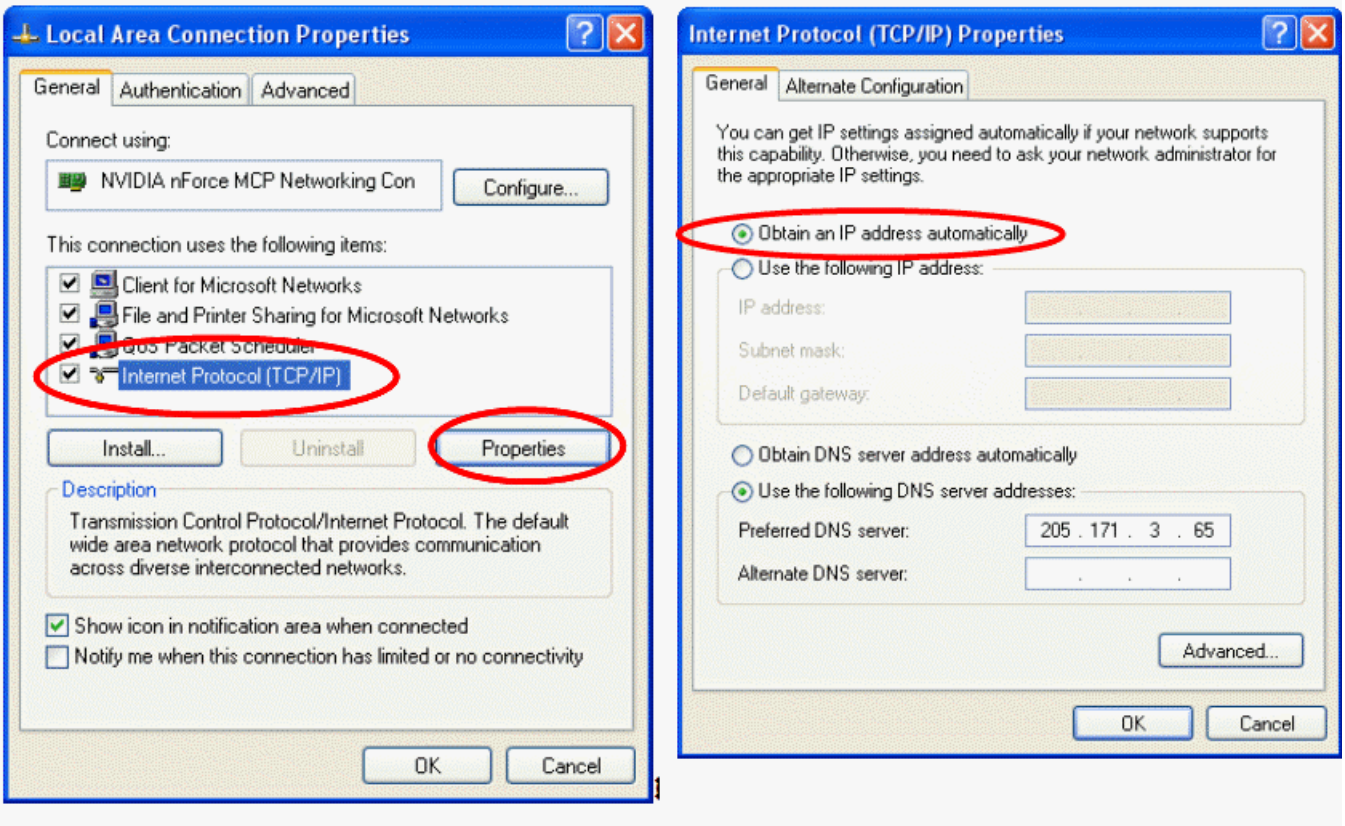
To obtain a dynamic IP address so it can be assigned to the Ethernet port:

1. Make the RouteFinder connections as described on the previous two pages.
2. Click **Start | Settings | Control Panel**. Double-click the **Network Connections** icon.
3. The **Network Connections** screen displays. Right-click the **Local Area Connection** icon and choose **Properties** from the drop down list.



4. The **Local Area Connection Properties** dialog box displays.
   - Select **Internet Protocol** [TCP/IP]**.**
   - Click the **Properties** button.

5. Once you click the **Properties** button, the following screen displays (below). To have your DCHP client obtain a dynamic IP address, click the **Obtain an IP address automatically** button.


Local Area Connection Properties
General
Authentication
Advanced
Connect using:
NVIDIA nForce MCP Networking Con
Configure...
This connection uses the following items:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
Internet Protocol (TCP/IP)
Install...
Uninstall
Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected
Notify me when this connection has limited or no connectivity
OK
Cancel
Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
205 . 171 . 3 . 65
Alternate DNS server:
Advanced...
OK
Cancel

6. Close out of the Control Panel.
7. Repeat these steps for each PC on your network.

Setting a Fixed IP Address

To set a Fixed IP Address, check **Specify an IP address** instead of **Obtain an IP address automatically**. Then click **OK**.

1. Enter the workstation IP address as **192.168.2.x**. Note that the **x** in the address stands for numbers 101 and up.
2. Enter the Subnet mask as 255.255.255.0
3. Enter the Default gateway as 192.168.2.1
4. Close out of the Control Panel.
5. Repeat these steps for each PC on your network.

Obtaining & Activating a Wireless Account

You may want to use a wireless connection to the Internet in case your Ethernet WAN connection goes down. Before you can use the this feature, you must obtain a wireless account through a service provider and then activate the account.

Activation Notices

Please see the wireless account **Activation Notices** located on the MultiModem CD. Choose the one for your wireless network provider and follow the directions to activate your account. These directions are also included in your ship kit.

How Connect to the Internet Through the Wireless Provider's Service

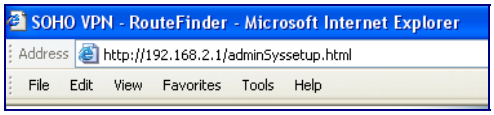
Important Note About Provider Fees

Your provider will charge you for your data usage. Please check with your provider to make sure you are aware of the charges.

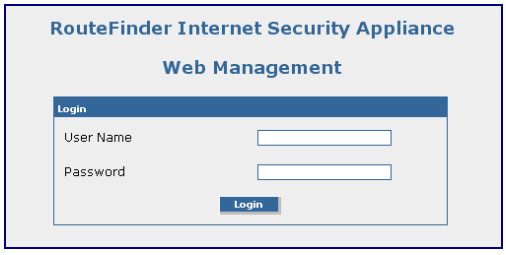
If you plan to use the router for large amounts of data transfers, Multi-Tech recommends an unlimited data plan with your account. Multi-Tech will not be responsible for any charges relating to your cellular bill.

Steps to Follow to Connect to the Internet

1. Turn on your PC and login. Make sure your LAN connection is set to **Obtain an IP Address Automatically** (see the section *Setting a TCP/IP Connection*).
2. Connect the RouteFinder LAN port to the PC using the Ethernet RJ-45 cable and apply power by plugging in the power cable.
3. Attach the cellular wireless antenna and the AP antenna.
4. For EDGE models, make sure your SIM card is inserted correctly.
5. From the workstation, open the command window by clicking the **Start** button and selecting **Run**.
6. Type **CMD** to open the command window. Click **OK**.
7. When the command window opens, type **IPCONFIG**.
8. Check to make sure your LAN connection has received an IP address in the 192.168.2.x subnet from the RouteFinder. If not, type **IPCONFIG /RELEASE**, and then type **IPCONFIG /RENEW** to see if you receive an IP address. Close the command window.
9. Open a Web browser and complete the following:
   - In the **Address bar** type **http://192.168.2.1**


SOHO VPN - RouteFinder - Microsoft Internet Explorer
Address
http://192.168.2.1/adminSyssetup.html
File Edit View Favorites Tools Help

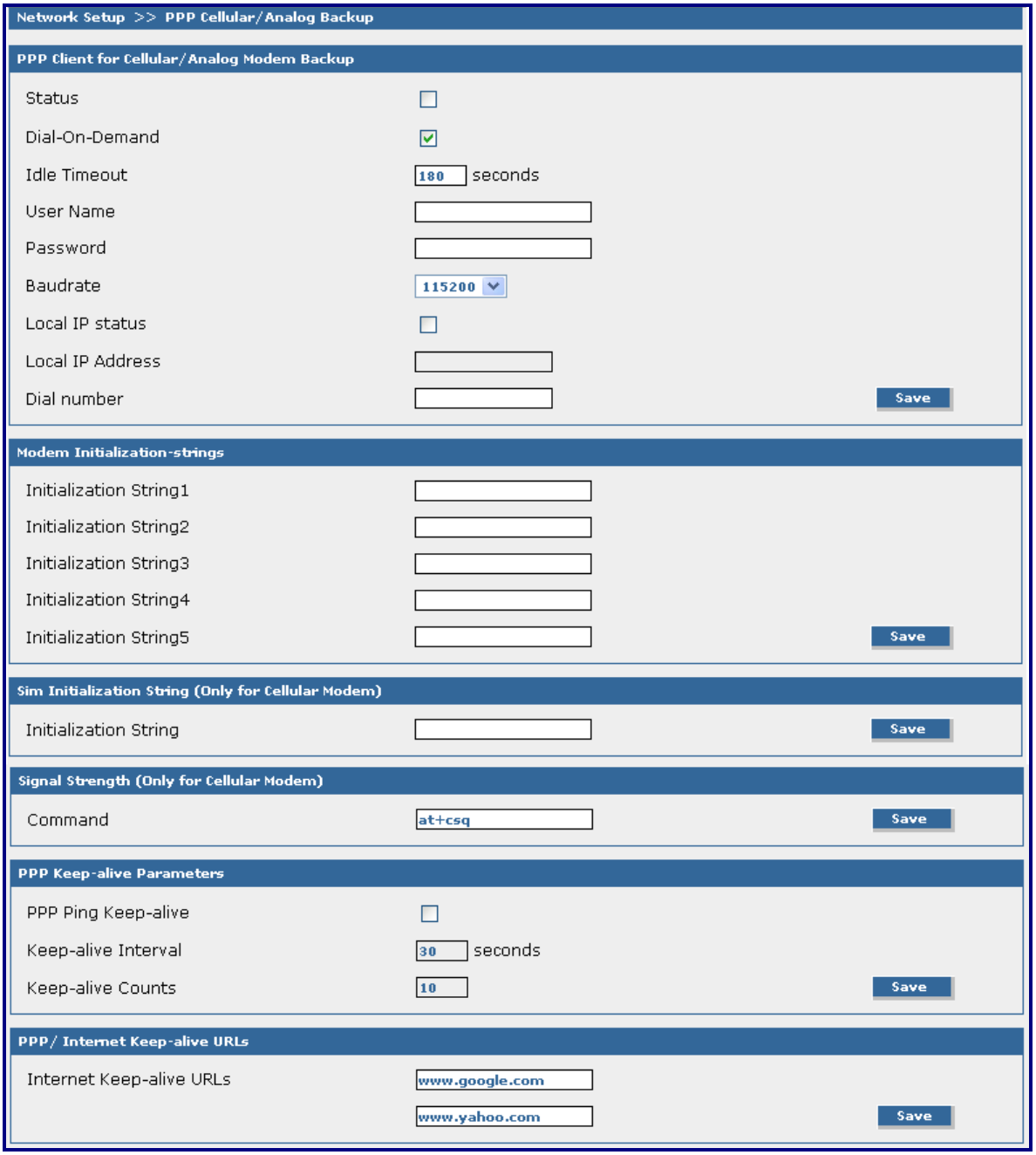
   This opens the Web Management software included with your wireless product.
   - Click **Go**.
   - The *Login* screen displays. Type **admin** for **Username** and **admin** for **Password**



10. Once you are logged in, you must setup the PPP functionality. Select **Network Setup** from the Menu bar, and then select *PPP Cellular/Analog Backup* when the Network Setup screen displays.

MultiTech Systems
Administration | Networks & Services | Network Setup | Packet Filters | VPN | Proxy | DHCP Server | Utilities | Statistics & Logs
Help | Home | Wizard Setup | Save & Restart | Logout
>> Home Page
Home Page
RouteFinder Internet Security Appliance

The *PPP Cellular/Analog Backup* screen displays.



Enter the following on the *PPP Cellular/Analog Backup* screen to configure the PPP dialer:

Status:	Check this box to enable PPP.
Dial-on-Demand:	Select Disable (select *disable* to stay connected at all times).
Idle time out:	0 (zero indicates that the connection will not disconnect)
User Name:	Enter your user name. There is no default.
Password:	Enter your password. There is no default.
Baud Rate:	For CDMA models, select **115200**. For EDGE models, select **230400**.
Dial Number:	For CDMA models, type **#777** For EDGE models, type ***99***1#**.
Save:	Click the **Save** button.
Init String 1:	For EDGE models, type **AT+CGDCONT=1,"IP","<APN>"** CDMA does not require an initialization string. **Note:** The APN (Access Point Name) is assigned by your wireless service provider. An access point is an IP network to which a mobile device can be connected.
Signal Strength Command:	For CDMA, enter **AT+CCED** For EDGE, enter **AT+CSQ**
Save:	Click the **Save** button.

11. Click **Save & Restart** (located on the Menu bar). The RouteFinder will shut down and reboot.
12. After the RouteFinder has restarted and the **Status** light is flashing, wait for about 1 minute to be sure that the **TR** and **CD** LEDs are lit and showing a solid light (not blinking).
13. From the workstation, open the command window by clicking the **Start** button and selecting **Run**.
14. Type **CMD** to open the command window. Click **OK.**
15. When the command window opens, type **IPCONFIG /RELEASE** to release your current IP received from the router.
16. Then type **IPCONFIG /RENEW** to renew your IP address from the router. You should also receive a DNS address from the RouteFinder.
17. Close the command window.
18. Open a Web browser. You are now connected to the Internet.
19. To verify a connection, go to the RouteFinder's software screen, *Statistics & Logs > PPP Cellular/Analog Log.*

To Disable Your Cellular Connection

Uncheck the *Status* box for the PPP option by using the RouteFinder's Web Management software *Wizard Setup* screen or select *Network Setup > PPP Cellular/Analog Backup* and disable **PPP**.

Additional Configuration of the Cellular Modem

You may want to further communicate directly to the cellular modem for checking signal strength, verifying network registration, and/or troubleshooting your Internet connection. To do this:

1. Disable PPP in the RouteFinder software by selecting *Network Setup > PPP Cellular/Analog Backup***;** make sure PPP *Status* box is ***not*** checked.
2. Open a PC's command window by clicking the **Start** button and selecting **Run**.
3. Type **CMD** to open the command window. Click **OK**.
4. When the command window opens, type **IPCONFIG**.
5. Type **Telnet 192.168.2.1 5000** (Note: 5000 is the port number).

   See the CDMA and EDGE AT Commands Reference Guides for other commands.

Command Examples

Verifying Signal Strength

1. In the command window:

   For EDGE and Verizon CDMA type the following command to query the signal strength: **AT+CSQ**
   Response Example: +CSQ: xx, 99 **(**For *xx*, see the values chart below)

   All other CDMA type the following command to query the signal strength: **AT+CCED**
   Response Example: +CSQ:16, 99
   +CCED:0,0,384,26,2,6,104,2513,2,17,xx,-45,-63 (For *xx*, see tables below)

2. The modem responds with the received signal strength (rssi).

   The following table lists the xx values and explains how they correspond to the number of LEDs lit for signal strength.

Signal Strength Tables

AT+CSQ	Signal Strength LED Bars	Signal Strength
0 to 6	No LEDs are lit	Very weak signal
7 to 14	1 Bar LED is lit	Weak signal
15 to 23	1 Bar and 2 Bar LEDs are lit	Stronger signal
24 to 31	1 Bar, 2 Bar, 3 Bar LEDs are lit	Strongest signal

AT+CCED	Signal Strength LED Bars	Signal Strength
-113 to -101	No LEDs are lit	Very weak signal
-99 to -85	1 Bar LED is lit	Weak signal
-83 to -67	1 Bar and 2 Bar LEDs are lit	Stronger signal
-65 to -51	1 Bar, 2 Bar, 3 Bar LEDs are lit	Strongest signal

Checking Network Registration and Roaming Status

Use this command to verify that the wireless MultiModem has been registered on a wireless network.

1. In the command window, type **AT+CREG?**
2. The modem will respond in one of the following ways:

Network Registration Verification	
Value	**Network Registration Status**
+CREG: 0,0	The modem is not registered on any network
+CREG: 0,1	The modem is registered on the home network
+CREG: 0,5	The modem is registered on a network and it is roaming

Note: If the modem indicates that it is not registered, verify the signal strength to determine if the problem is the strength of the received signal.

Chapter 4 – Configuring the RouteFinder

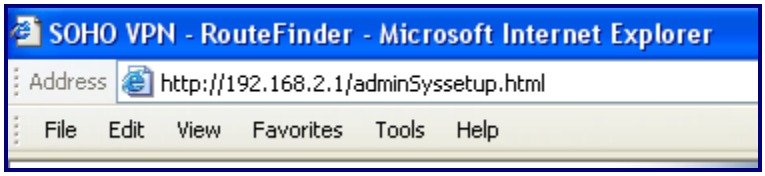
Starting the RouteFinder

Open a Web Browser

Initial configuration is required in order for you to begin operation. The browser-based interface eases configuration and management.

Note: Be sure that the RouteFinder is cabled and that the power is connected as shown in Chapter 2. Bring up a Web browser on the PC.

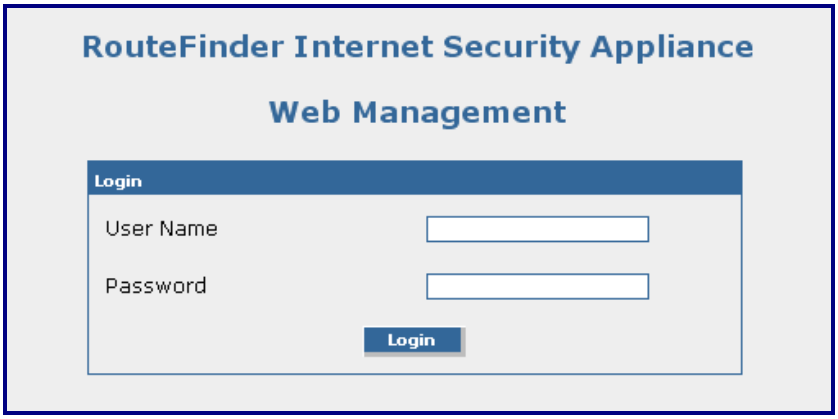
1. Type the default gateway address line: http://192.168.2.1
2. Press **Enter**.



Note: Make sure your PC's address is on the same network as the router's address. **IPCONFIG** is a tool for finding out a PC's IP configuration (the default gateway and the MAC address).

Login

The Login screen for the RouteFinder software displays.



- Type **admin** (*admin* is the default user name) in the user name box.
- Type **admin** in the password box.
- Click **Login**.

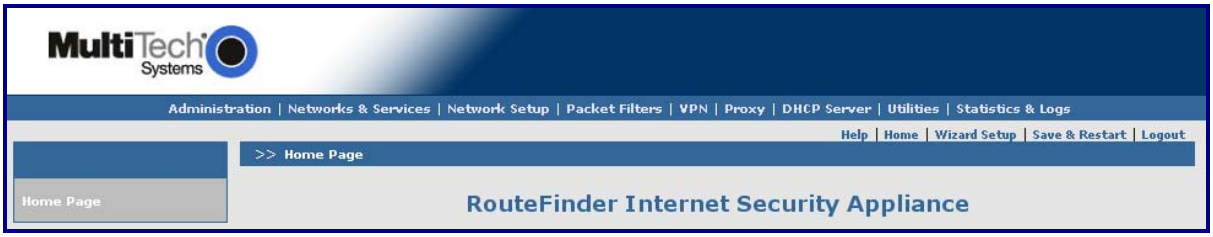
  Note: The **User name** and **Password** entries are case-sensitive (both must be typed in lower-case). The password can be up to 12 characters. Later, you will want to change the password from the default (**admin**) to something else (see the User Guide). If Windows displays the **AutoComplete** screen, you may want to click **No** to tell Windows OS to **not** remember the password for security reasons.

  Password Caution: Use a safe password! Your first name spelled backwards is not a sufficiently safe password; a password such as xfT35$4 is better. It is recommended that you change the default password. Create your own password.

Web Management Software Opens

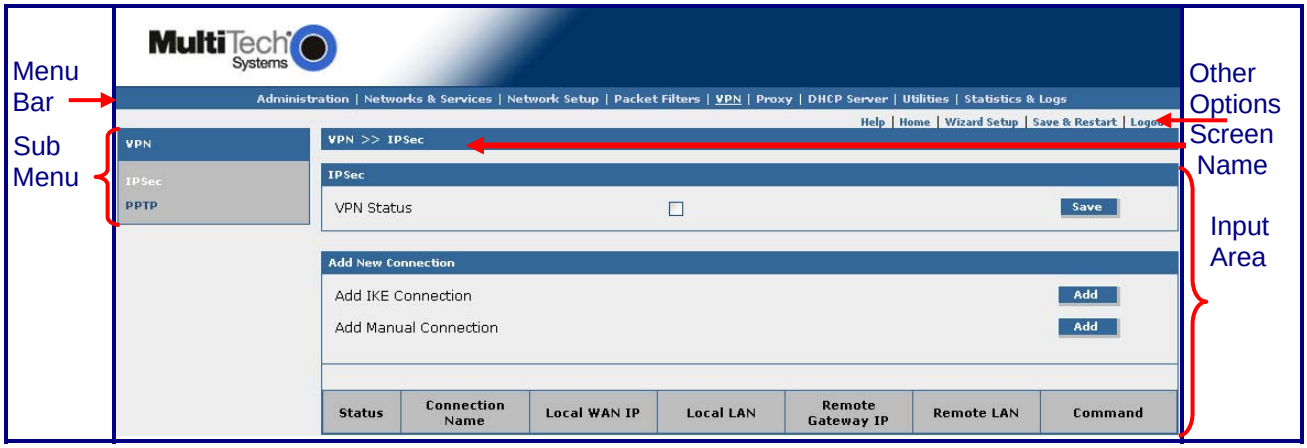
This is the Home screen from which you can access all setup functions.

Note: Only the top portion of the Home screen is shown here**.**


MultiTech Systems
Administration | Networks & Services | Network Setup | Packet Filters | VPN | Proxy | DHCP Server | Utilities | Statistics & Logs
Help | Home | Wizard Setup | Save & Restart | Logout
>> Home Page
Home Page
RouteFinder Internet Security Appliance

Navigating the Screens

Before using the software, you may find the following information about navigating through the screens and the structuring of the menus helpful.



Menu Bar

MultiTech Systems
Administration | Networks & Services | Network Setup | Packet Filters | VPN | Proxy | DHCP Server | Utilities | Statistics & Logs

See menu categories and their submenus below.

Sub-Menus

Each Menu Bar selection has its own sub-menu, which displays on the left side of the screen.

When you click one of the Main Menu choices, the first screen listed in the sub-menu displays. You can choose other sub-menu options/screens by clicking on your sub-menu choice.

This is an example of the **Administration** sub-menu. It displays when you click **Administration**.

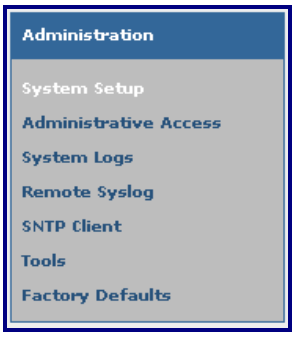


Table of Menus and Sub-Menus

Administration	Networks & Services	Network Setup	Packet Filters	VPN
System Setup Administrative Access System Logs Remote Syslog SNTP Client Tools Factory Defaults	Network Configuration Service Configuration	IP Settings Wireless LAN WLAN Security WLAN Client Filter Advanced IP Settings PPP Cellular/Analog Backup Dynamic DNS Static Routes IP Masquerading SNAT DNAT	Packet Filter Rules Advanced Filters ICMP Packet Filter Log	IPSec PPTP
Proxy	**DHCP Server**	**Utilities**	**Statistics & Logs**	
HTTP Proxy Custom Filters DNS Proxy	LAN LAN Subnet Settings LAN Fixed Addresses *These menu options:* Wireless LAN WLAN Subnet Settings WLAN Fixed Addresses *display when you go to* ***Network Setup > Wireless LAN*** *and select* ***Independent Subnet***	Backup Firmware Upgrade	System Information Network Interface Details Packet Filter Log IPSec Live Log PPTP Live Log DHCP Server Live Log PPP Cellular/Analog Log WLAN Client Live Log Log Traces	

Basic Configuration Using the Setup Wizard

Use the Wizard Setup for Quick Configuration

A quick way to configure the RouteFinder is to use the *Wizard Setup*. The Wizard Setup can be opened by clicking the words *Wizard Setup* located under the Web Management software's menu bar. The information entered here will default to other screens that require this information.

Important Note: An initial configuration must be completed for each type of RouteFinder functions: firewall configuration, LAN-to-LAN configuration, or a LAN-to-Remote Client configuration.

Benefits of Using the Wizard Setup

- Saves time so that you are not entering the same information several times.
- Allows you to start using your device with a minimum configuration.
- Provides a short way to enter and save information needed to create a connection to the Internet.

Note: Additional features and functions can be set up using the complete Web Management software program, described in Chapter 7.

The Wizard Setup Screen

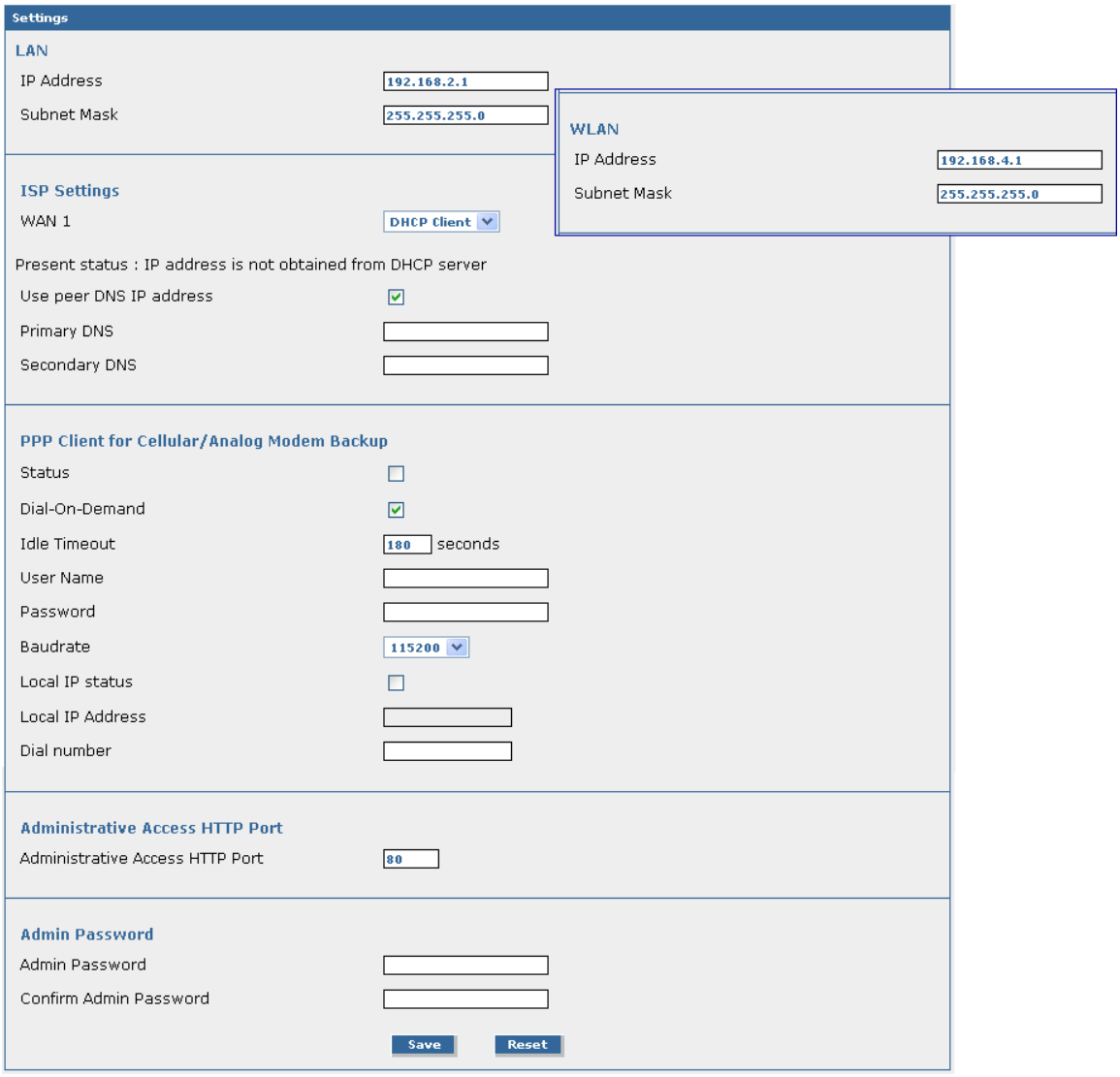
Using the Wizard Setup is a quick way to enter the basic configuration parameters to allow communication between the LAN workstation(s) and the Internet.

Important Note: An initial configuration must be completed for each type of RouteFinder functions: firewall configuration, LAN-to-LAN configuration, a LAN-to-Remote Client configuration.

Click the **Wizard Setup** button located under the Menu Bar. The following screen displays.

Screen Notes:

- **If you are using the AP build, a section labeled *WLAN* (inset shown on the right of the screen shot) displays after you select *Independent Subnet* on the *Network Setup > Wireless LAN* screen.**



LAN Settings – The following settings should be acceptable for your site:

IP Address – 192.168.2.1 defaults into this field.

Subnet Mask – 255.255.255.0 defaults into this field.

ISP Settings

Select the way the IP Address should be assigned for the WAN link. The default is **DHCP Client**. When you select **Static IP** or **PPPoE**, the input fields change.

- **WAN *DHCP Client* Choice**

  DHCP (Dynamic Host Configuration Protocol) is a protocol that allows individual devices on an IP network to get their own network configuration information (IP address, subnet mask, broadcast address, etc.) from a DHCP server.

  Present Status: If the DHCP client is **not** enabled, the following message displays: *Present Status: IP address is not obtained from DHCP server.* If DHCP client is enabled and if the IP address has been assigned by the DHCP server, then the following values will display:

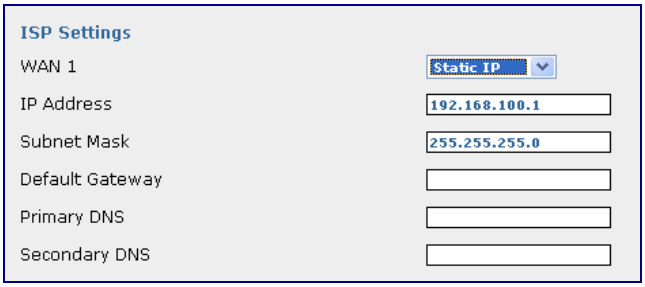
  Assigned IP Address
  Mask
  DCP Server Address
  DNS Address
  Gateway Address
  Renew Time
  The time that the DHCP client should begin to contact its server to renew the lease it has obtained.
  Expiry Time
  Expiry time is the time that the DHCP client must stop using the lease if it has not been able to contact a server in order to renew.

  Use Peer DNS IP Address
  Check this box if you want the DNS server addresses from the peer (DHCP server) is to be obtained.
  Note: The DNS address obtained from the DHCP server will be displayed on the *Network Setup* > *Interface* screen.

  Primary DNS
  In this field, enter a primary domain server name (DNS). DNS (Domain Naming System) allows you to enter a name (i.e., mydomain.com) to be used in place of the computer's numeric IP address.

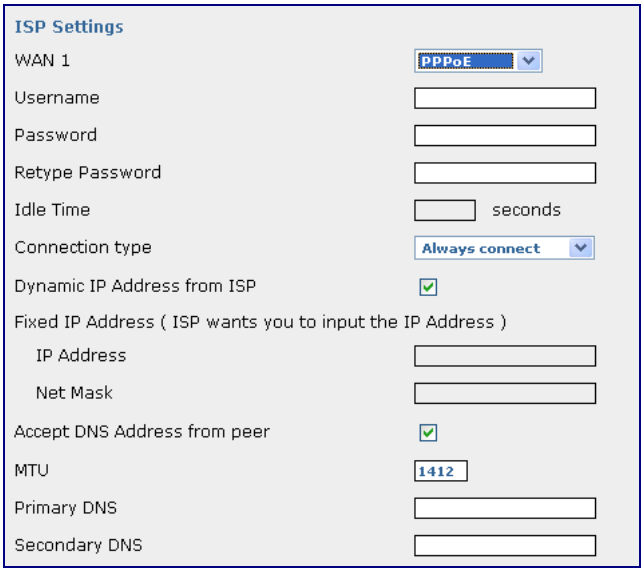
  Secondary DNS
  In this field, enter a secondary domain server name.

- **WAN *Static IP* Choice**



  If you choose Static IP for WAN, the IP Address (default is 192.168.100.1) and the Subnet Mask (default is 255.255.255.0) fields displays.
  Enter the *Default Gateway*, the *Primary DNS* address and the *Secondary DNS* address for the IP address provided.

- **WAN *PPPoE* Choice**



PPPoE (Point-to-Point over Ethernet) is a specification for connecting multiple computer users on an Ethernet local area network to a remote site through DSL or cable modems or wireless connection to the Internet. The following fields display when you select PPPoE:

User Name

Enter the user name give by the ISP.
Example: user1@xyz.com or user 1

Password

Enter the user's password.
These characters are not allowed: <, >.
The maximum number of allowed is 18.

Retype Password

Retype the password to confirm the one entered above. Passwords must match in order to continue. If you receive an error, enter password in both fields again.

Idle Time

This option is available only when the Connection Type is *Trigger on Demand.* Specify the inactivity time (in seconds) after which the PPPoE link should be brought down.

Connection Type

Specify the type of connection for the link. Options are:
Always Connect: The link will always be established. It is not dependent on whether or not there is data or a traffic flow through the RouteFinder. **Default.**
Trigger on Demand: The link will be established only when there is data or a traffic flow through the RouteFinder.

Dynamic IP Address from ISP

Check the box to Enable the Dynamic IP address to be provided by the ISP. If enabled, the IP address obtained from the ISP is dynamic. If disabled, enter the IP address and subnet mask from the ISP in the following *Fixed Address* fields: *IP Address* and *Net Mask*
Note: If the ISP does not support the Fixed Address option, then the RouteFinder will accept the dynamic IP address provided by the ISP.

Accept DNS Address from Peer

Check this box if you want the DNS server address to be obtained from the peer (the ISP). The DNS address obtained from the ISP will be displayed on the *Network Setup* > *Interface* screen. The details of the address/subnet mask obtained from the ISP are displayed as the *Present Status* on this screen.

- **WAN PPPoE Choice (Continued)**

MTU

A Maximum Transmission Unit (MTU) is the size (in bytes) of the largest packet that can be passed onwards.
The default for this field is 1412, which should be acceptable for most applications. To read more about MTU, see the following Web site:
http://en.wikipedia.org/wiki/Maximum_transmission_unit

Primary DNS

In this field, enter a primary domain server name (DNS). DNS (Domain Naming System) allows you to enter a name (i.e., mydomain.com) to be used in place of the computer's numeric IP address.

Secondary DNS

If a secondary domain server name is configured, enter its name here. The servers are consulted in the order in which they are configured.

PPP Client for Cellular Modem Backup Settings

PPP client is used as a backup link to the WAN interface. If the **Internet Keep-alive URLs** (see below) are not reachable through the WAN Ethernet interface, the PPP backup link automatically comes up and the system regains its connection to the ISP. The PPP dial backup settings are:

Status
Check this box to enable PPP Dial Backup on WAN interface.

Dial-on-Demand
Check this box to initiate dial-on-demand, which automatically makes the connection when there is traffic.

User Name
Enter the user name to authenticate the RouteFinder with the ISP.

Password
Enter the user password. The password is optional. These special characters cannot be used: <, >.

Baud Rate
Select the serial baud rate from the drop down box. Select 115200 for CDMA and 230400 for EDGE.

Local IP Status
Check this box to enable support for negotiating an IP address with the ISP (this address will be enter in the next field).

Local IP Address
Enter the IP address from which the RouteFinder can negotiate for an IP address from the ISP.

Dial Number
Enter the PSTN number to be dialed.

Note: When the backup link comes up or goes down, an email alert is sent to the administrator.

Administrative Access HTTP Port

Select the HTTP port for administrative access. The default is port 80. The port number should be between 1 and 65535. Well known ports and ports used by the firewall are not allowed.

Admin Password

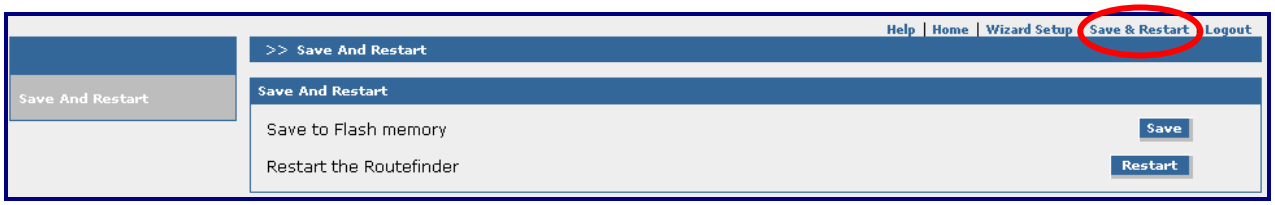
Change administrator's *Password*. Enter the password and a confirmation of the password. These characters are not allowed: <, >. Also, spaces are not allowed.

Save, Reset

Click **Save** at the bottom of the screen to save these entries. Use **Reset** if you want to change the entries you have just made.

Save & Restart Button Under Menu Bar

Select the **Save and Restart** button located just under the menu bar. The *Save and Restart* screen displays.



Save to Flash Memory

If a connection is established, then the settings have been entered correctly and your basic configuration is now complete. Now, you must save your settings to the Flash Memory; this saves the current settings in the flash prom and prevents settings from getting lost at the next power up.

Restart

This is optional. You do not have to restart the RouteFinder after saving to the flash memory.

Your Basic Configuration Using the Setup Wizard is now Complete.

Testing Your Workstation

Test your workstation by trying to access the Internet. If a connection is established, then the settings have been entered correctly.

Chapter 5 – Using the RouteFinder's Web Management Software

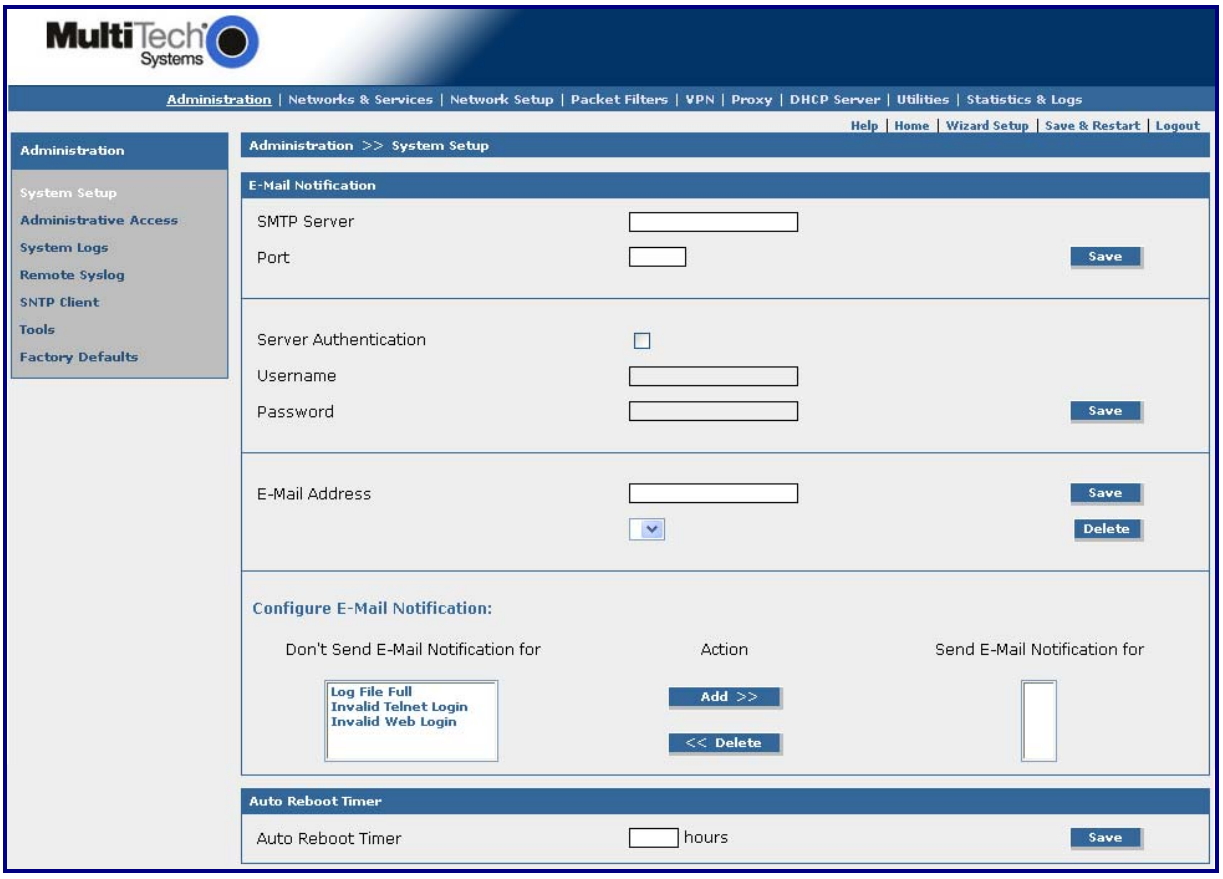
This chapter takes you screen-by-screen through the software.

Note: The antenna must be attached in order for the RouteFinder to be operational.

Administration

Administration › System Setup

In the *Administration* part of the software, you can set the RouteFinder general system-based parameters. *System Setup* includes the setting the Administrator's email address and the types of email notifications that will be sent to the System Administrator.



Email Notification

SMTP Server

Enter the IP address of the mail server.

Port

Enter the port number on which the mail server listens.

Server Authentication

Some mail servers accept connection only after a user name and password are authenticated.

User Name
If your mail server accepts connection only after a user name and password are authenticated, enter your user name.

Password
If your mail server accepts connection only after a user name and password are authenticated, enter your password.

Email Address
Enter the email address of the administrator who will receive the email notifications. Enter it in proper user@domain format. Click **Save**. You can delete the entry and change it at any time, if desired.
At least one email address must be entered in this field.

Configure Email Notification
Select the types of notifications that you want sent. Click the **Add** button. The name will then appear in the *Send Email Notification For* box. You can remove a type by clicking the **Delete** button. The name will than move back to the *Don't Send Email Notification For* box.

1. Invalid Telnet Login
2. Export File Backup
3. Log File Full

Auto Reboot Timer
Enter the number of hours you want the RouteFinder to automatically reboot.
Then click the **Save** button.

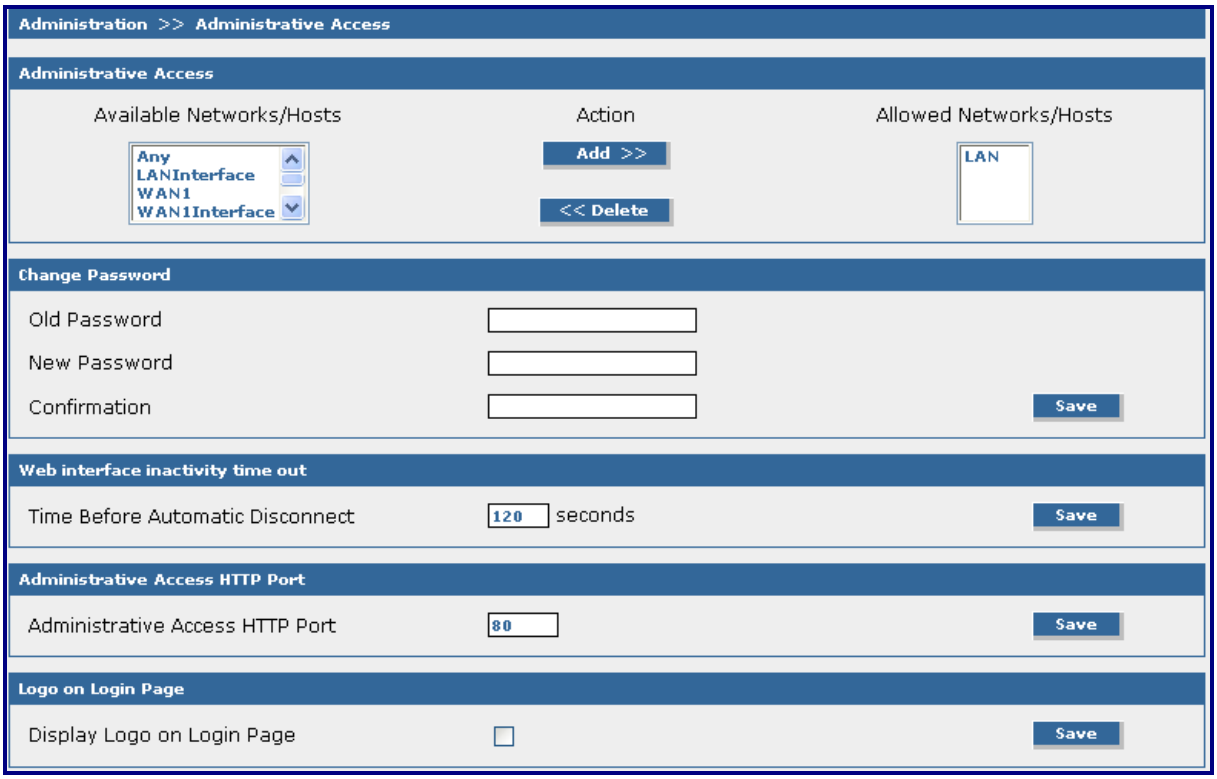
Note: Setting the value to zero, disables the feature.

Administration › Administrative Access

The networks and hosts that are allowed to have administrative access are selected on this screen. This is a good way to regulate access to the configuration tools.

Screen Note:

If you are using the AP build and you select *Independent Subnet* on the *Network Setup > Wireless LAN* screen, *WLAN Interface* is available in the drop down list box of *Available Networks/Hosts*.



Administrative Access

Available Networks/Hosts and Allowed Networks/Hosts

Select the networks/hosts that will be allowed administrative access. Note that the selection box list will include those networks you enter under *Networks & Services > Network Configuration.*

You can change access by moving network/hosts names from the *Available* list to/from the *Allowed* list. The RouteFinder will display an ERROR message if you try to delete access to a network that would cause you to lock yourself out.

Note: Any defaults here for ease of installation. ANY allows administrative access from everywhere once a valid password is provided.

Caution: As soon as you can limit the location from which the RouteFinder is to be administered (e.g., your IP address in the internal network), replace the entry *ANY* in the selection menu with a smaller network. The safest approach is to have only one administrative PC given access to the RouteFinder. You can do this by defining a network with the address of a single computer from the *Networks and Services > Network Configuration* screen.

Change Password

You should change the password immediately after initial installation and configuration, and also change it regularly thereafter.

Old Password, New Password, Confirmation

To change the password, enter the existing password in the *Old Password* field, enter the new password into the *New Password* field, and confirm your new password by re-entering it into the *Confirmation* entry field.

Caution: Use secure passwords! For example, your name spelled backwards is not secure enough; something like **xfT35$4** is better.

Web Interface Inactivity Time Out

An automatic inactivity disconnection interval is implemented for security purposes. In the *Time Before Automatic Disconnect* entry field**,** enter the desired time span (in seconds) after which you will be automatically disconnected from the software program if no operations take place.

After the initial installation, the default setting is 120 seconds.

The smallest possible setting is 60 seconds.

The maximum setting is 3000 seconds.

If you close the browser in the middle of an open configuration session without closing via Exit, the last session stays active until the end of the time-out and no new administrator can log in.

Administrative Access HTTP Port

This field is used for setting the HTTP port for Web administration. After changing the HTTP port, the connection is terminated. The browser settings have to be changed for the new port number before starting the next session.

By default, port 80 is configured for HTTP sessions. The value of the port number should lie between 1 and 65535. Well known ports and ports already used by the firewall are not allowed.

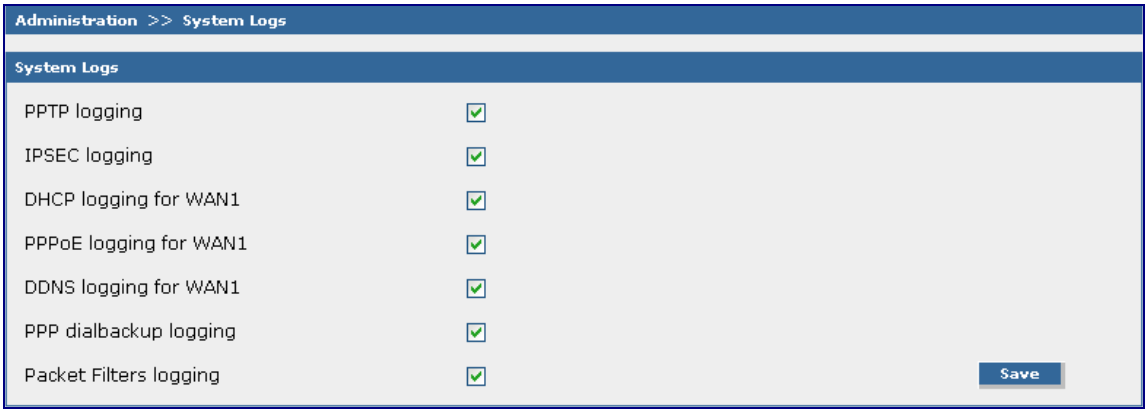
If you want to use the HTTP service for other purposes (e.g., a diversion with **DNAT**), you must enter a different TCP port for the interface here. Possible values are 1-65535, but remember that certain ports are reserved for other services. We suggest you use ports 440-450. To have Administrative Access after the change, you must append the port to the IP address of the ROUTEFINDER separated by a colon (e.g., http://192.168.0.1:445).

Logo and Version on Logon Page

Check this box if you want the logo and version number to display on the logon page. Click **Save**.

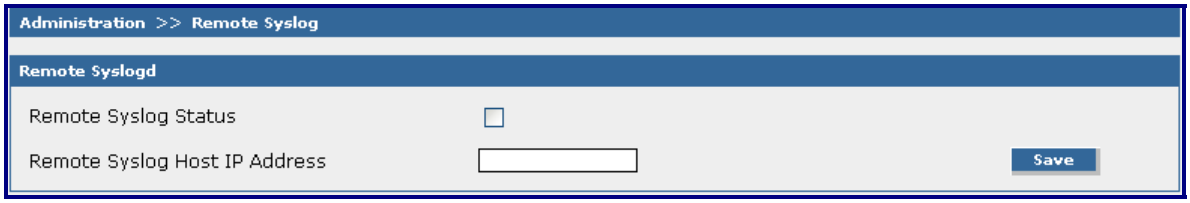
Administration › System Logs

Screen Note: *PPP Dial Backup Logging* is available on the AP build only.



To enable the RouteFinder System Logs, place a checkmark across from the log you want enabled. Then click the **Save** button.

Administration › Remote Syslog



Note: Enabling Remote Syslog logging will slow down the performance of the RouteFinder. It should be used strictly for debugging purposes only.

Remote Syslog

Remote Syslog Status

Check the Remote Syslog Status box to enable the remote syslog function.

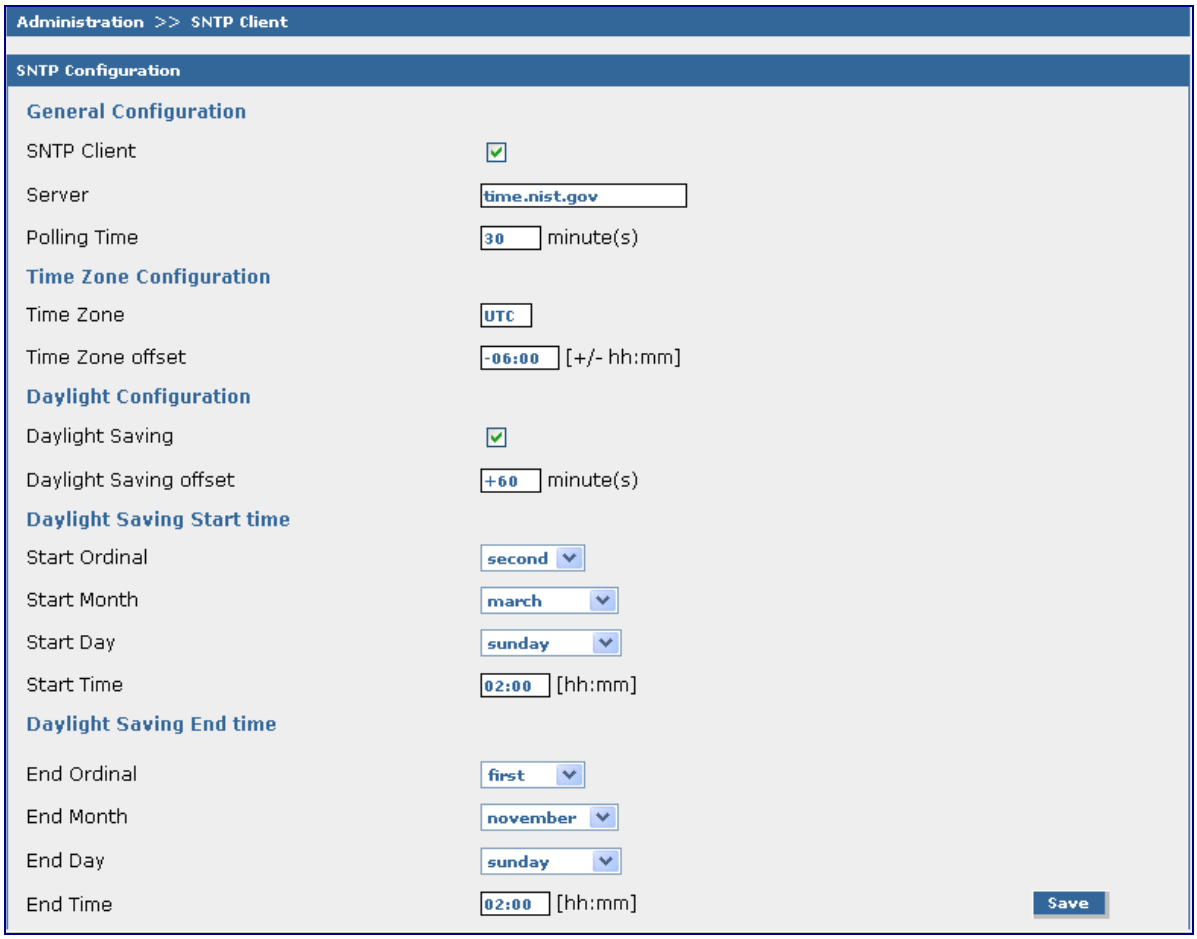
Remote Syslog Host IP Address

If Remote Syslog is enabled, then you must specify the Host IP Address. All log messages from the RouteFinder will be forwarded to this address.

On the remote host, syslog should be invoked with the “-r” option to enable the host to receive log messages from the other machines.

Administration › SNTP Client

SNTP (Simple Network Time Protocol) is an internet protocol used to synchronize the clocks of computers on the network. Clicking the SNTP Client check box enables the firewall to act as a SNTP client.



SNTP Configuration

General Configuration

SNTP Client

Enable or disable the SNTP Client to contact the configured server on the UDP port 123 and set the local time. Default is Disable.

Server

Enter the SNTP server name or IP address to which the SNTP Client must contact in order to update the time. No default.

Polling Time

Enter the polling time at which the SNTP client requests the server to update the time. Default is 300 minutes. Time must be entered in minutes.

Time Zone Configuration

Time Zone
Enter your time zone. Default = UTC (Universal Coordination).
See the following Web site for Time Zone information:
http://wwp.greenwichmeantime.com/info/timezone.htm

Time Zone Offset
Enter +/- hh:mm. Default = +00:00. Offset is the amount of time varying from the standard time of a Time Zone.

Daylight Configuration

Daylight Saving
Enables/disables Daylight Saving mode. Default is Enable.

Daylight Saving Offset
Set the offset to use during Daylight Saving mode. Default is +60 minutes. Enter the time in + / - minutes.

Daylight Saving Start Time

Start Ordinal
Set the start ordinal to use during Daylight Saving mode. Options are first/second/third/fourth/last. Default is second.

Daylight Saving time usually starts at the same time on the same day of the week in the same month every year. Each day of the week occurs four or five times a month. Therefore, you will be selecting the week in which daylight saving time starts: the first, second, third, fourth or the last of the month. In the U.S.A., daylight saving time starts at 2:00 a.m. on the second Sunday in March.

Start Month
Set the start month to use during Daylight Saving mode. The default is March.

Start Day
Set the start weekday to use during Daylight Saving mode. The default is Sunday.

Start Time
Set the start time to use during Daylight Saving mode. Default is 02:00 (hh:mm).

Daylight Saving End Time

End Ordinal
Set the end ordinal to use during Daylight Saving mode. Select the week in which daylight saving time ends. Options are first/second/third/fourth/last. Default is first.

End Month
Set the end month to use during Daylight Saving mode. The default is November.

End Day
Set the end weekday to use during Daylight Saving mode. Default is Sunday.

End Time
Set the end time to use during Daylight Saving mode. Default is 02:00 (hh:mm).

Save Button

Click the **Save** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

Administration › Tools

There are three tools that can help you test and maintain network connections and RouteFinder functionality.

Ping and **Trace Route** test the network connections on the IP level.

The **DDNS** Client is used to update the IP address of the modem/router in a DDNS server for the configured domain name whenever the IP Address changes, thus, leaving the domain name to be pointing to the current IP Address of the modem/router all the time.

Notes

1. For these tools to function, the ICMP on firewall function in **Packet Filter > ICMP** must be enabled.
2. For the Name Resolution function, enable the DNS proxy function in **Proxy > DNS Proxy**. To use the Name Resolution function, enable a name server in the menu (item) **Proxy > DNS Proxy**. When the Name Server is enabled, the IP addresses of the reply packets will be converted into valid names.

PING

Ping is an acronym for Packet Internet Groper. The PING utility is used as a diagnostic tool to determine if a communication path exists between two devices on the network. The utility sends a packet to the specified address and then waits for a reply. PING is used primarily to troubleshoot Internet connections, but it can be used to test the connection between any devices using the TCP/IP protocol.

If you PING an IP address, the PING utility will send four packets and stop.

If you add a -t to the end of the command, the PING utility will send packets continuously.

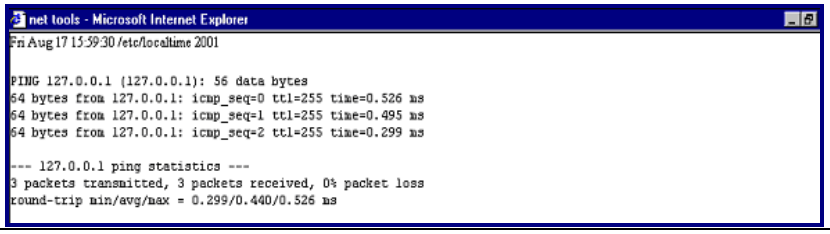
Host Specify the IP address/name of the other PC for which connectivity is to be checked.

No. of Pings Select the number of pings. You can choose 3 (the default), 10 or 100 pings. Enter the IP address or the name into the Host entry field (e.g., port **25** for SMTP).

Timeout Specify the time that packets can exist.

Packet Size Specify the number of data bytes to be sent.

Start Button After clicking **Start**, a new window opens with the PING statistics accumulating.


net tools - Microsoft Internet Explorer
Fri Aug 17 15:59:30 /etc/localtime 2001
PING 127.0.0.1 (127.0.0.1): 56 data bytes
64 bytes from 127.0.0.1: icmp_seq=0 ttl=255 time=0.526 ms
64 bytes from 127.0.0.1: icmp_seq=1 ttl=255 time=0.495 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=255 time=0.299 ms
--- 127.0.0.1 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max = 0.299/0.440/0.526 ms

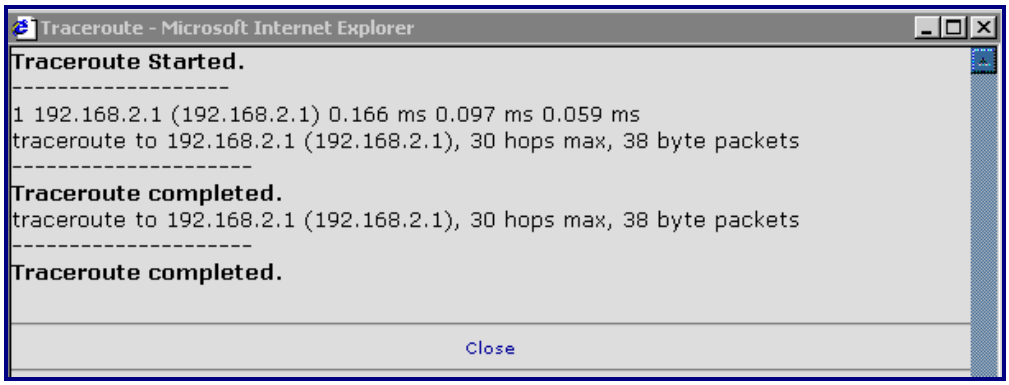
Trace Route

Trace Route is a tool for finding errors in the network routing. It lists each router's addresses on the way to remote systems. If the path for the data packets is temporarily unavailable, the interruption is indicated by asterisks (*****). After a number of tries, the attempt is aborted. The interrupted connection can have many causes, including the packet filter on the RouteFinder not allowing the operation of Trace Route.

Trace Route lists the path of the data packets all the way to the desired IP address. The path ends when the destination address has been reached. Should the data packets' path momentarily not be traceable, stars (*****) appear to indicate a time-out. After a fixed number of time-outs, the attempt is aborted. This can have various reasons (e.g., a packet filter doesn't allow Trace Route). If it is not possible to locate a name despite activated name resolution, the IP address is shown after several attempts instead.

Host Specify the **IP address** or the name of the other computer to test this tool.

Start Click the **Start** button to start the test.


Traceroute - Microsoft Internet Explorer
Traceroute Started.
1 192.168.2.1 (192.168.2.1) 0.166 ms 0.097 ms 0.059 ms
traceroute to 192.168.2.1 (192.168.2.1), 30 hops max, 38 byte packets
Traceroute completed.
traceroute to 192.168.2.1 (192.168.2.1), 30 hops max, 38 byte packets
Traceroute completed.
Close

A Sample Trace Route Log

DDNS – WAN

DDNS Force Update

Click the **Update** button to force the DDNS to update condition.

DDNS Status

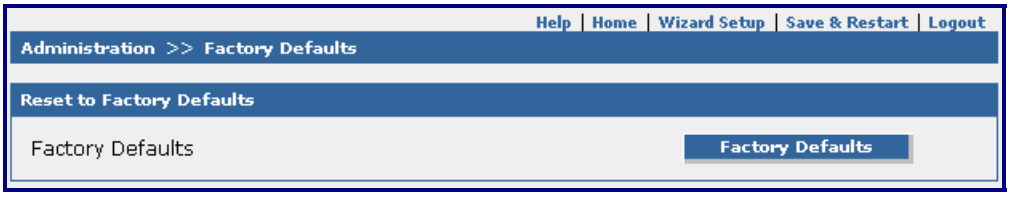
Click the **Refresh** button to display the DDNS Status after a forced update.

Reset Modem

Reset the Modem

Click the **Reset** button to reset the modem.

Administration › Factory Defaults


Help | Home | Wizard Setup | Save & Restart | Logout
Administration >> Factory Defaults
Reset to Factory Defaults
Factory Defaults
Factory Defaults

Reset to Factory Defaults

Factory Defaults

Click the **Factory Defaults** button to load the default settings.

Networks & Services

Networks & Services › Network Configuration

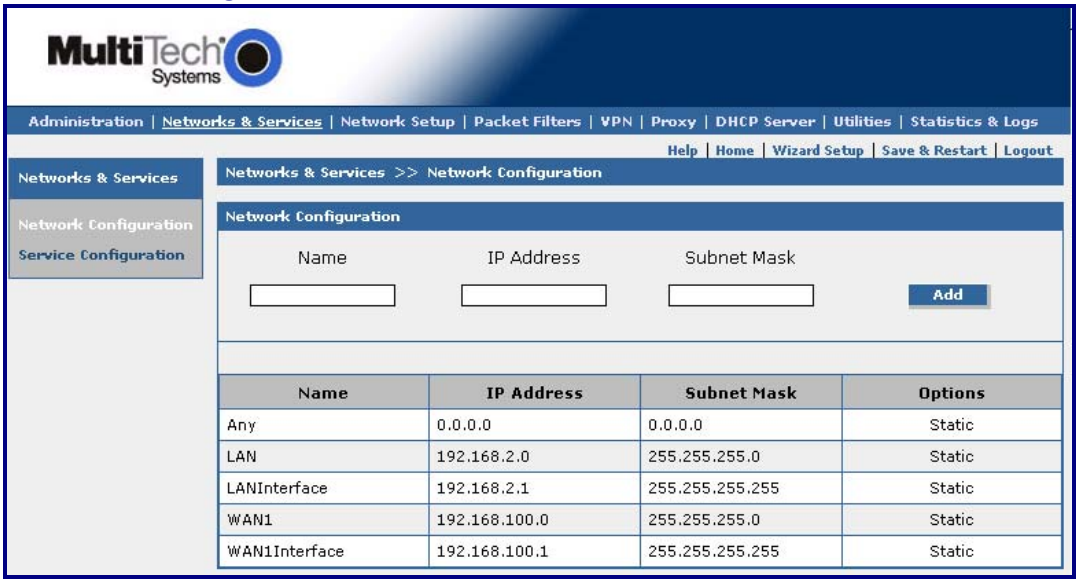
The names, addresses, and network masks or hosts are defined here. **Edit** and **Delete** options are used for editing or deleting the networks/hosts. However, the name of the network/host cannot be edited. The Edit link has to be clicked in order to change the address or mask entries. When you click **Edit**, the corresponding address and mask displays. The changed entries can be saved by clicking the **Save** button. For all other screens where that particular network/host is being used, the corresponding change in the IP address or mask will be made automatically. The networks/hosts can be deleted only if is not used for any route or by any other module.

If a network is being used by the routing screen, that network cannot be edited. Similarly, if a host address is edited and changed to a network address, and if that host was used by SNAT or DNAT, the change will not be performed.

Network Entries on the Network Configuration Screen Will Display on the Following Screens

Administration > Administration Access
Network Setup > Static Routes
Network Setup > IP Masquerading
Network Setup > SNAT, DNAT
Packet Filters > Packet Filter Rules
VPN > IPSec
VPN > PPTP
VPN > HTTP Proxy

Network Configuration Screen


MultiTech Systems
Administration | Networks & Services | Network Setup | Packet Filters | VPN | Proxy | DHCP Server | Utilities | Statistics & Logs
Help | Home | Wizard Setup | Save & Restart | Logout
Networks & Services
Network Configuration
Service Configuration
Networks & Services >> Network Configuration
Network Configuration
Name
IP Address
Subnet Mask
Add
Name | IP Address | Subnet Mask | Options
Any | 0.0.0.0 | 0.0.0.0 | Static
LAN | 192.168.2.0 | 255.255.255.0 | Static
LANInterface | 192.168.2.1 | 255.255.255.255 | Static
WAN1 | 192.168.100.0 | 255.255.255.0 | Static
WAN1Interface | 192.168.100.1 | 255.255.255.255 | Static

AP Network Configuration Screen

Note that the AP build will show the additional networks: WLAN and WLANInterface.

Name	IP Address	Subnet Mask	Options
Any	0.0.0.0	0.0.0.0	Static
LAN	192.168.2.0	255.255.255.0	Static
LANInterface	192.168.2.1	255.255.255.255	Static
WLAN	192.168.4.0	255.255.255.0	Static
WLANInterface	192.168.4.1	255.255.255.255	Static
WAN1	192.168.100.0	255.255.255.0	Static
WAN1Interface	192.168.100.1	255.255.255.255	Static

Network Configuration Fields

Name

Enter the name of network or host you want added to the list. This name has to unique; in other words, it should not be present in the displayed list. A space cannot be used in the name; it is considered an invalid character.

IP Address

Enter the IP address of the new network or host. The same address-mask pair should not be present in the displayed list.

Subnet Mask

Enter the network mask for the network/host. For host addresses, the mask is entered 255.255.255.255

How to Confirm Your Entries

Confirm your entries by clicking the **Add** button.

After a successful definition, the new network is entered into the network table. This network will now be referenced in other menus under this name. You can edit and delete networks by clicking **Edit** or **Delete** in the **Options** column for the network you want to change. The **Edit Network Publications** (in this example) is displayed. The name of the network cannot be changed, but the IP Address and Subnet Mask can be edited. You can delete a newly created network by clicking on **Delete** in the Options column for a desired network.

Example 1: IP address 192.168.2.1 – Subnet mask 255.255.255.0 – Define a private Class-C net.

Example 2: IP address 216.200.241.66 – Subnet mask 255.255.255.255 – Define a host in the Internet.

Note About Entries: Entries can be made in the dot notation style (e.g. 255.255.255.0 for a class C network).

Important Network Notes:

- LAN and WAN interfaces will change if changes are made to LAN/WAN IP addresses in Network Setup.
- To define a single host, enter its IP address and use a netmask of 255.255.255.255. Technically, single hosts are treated in the same way as networks.
- You can also use the bit "spelling" for the Subnet mask (e.g., write 30 instead of 255.255.255.252).
- A network or host can be deleted only if it is not used for any route or by any other module.
- If a network is being used by a routing section, that network cannot be edited. Similarly, if a host address is edited and changed to a network address, and if that host was used by SNAT or DNAT, the changed will not be performed.

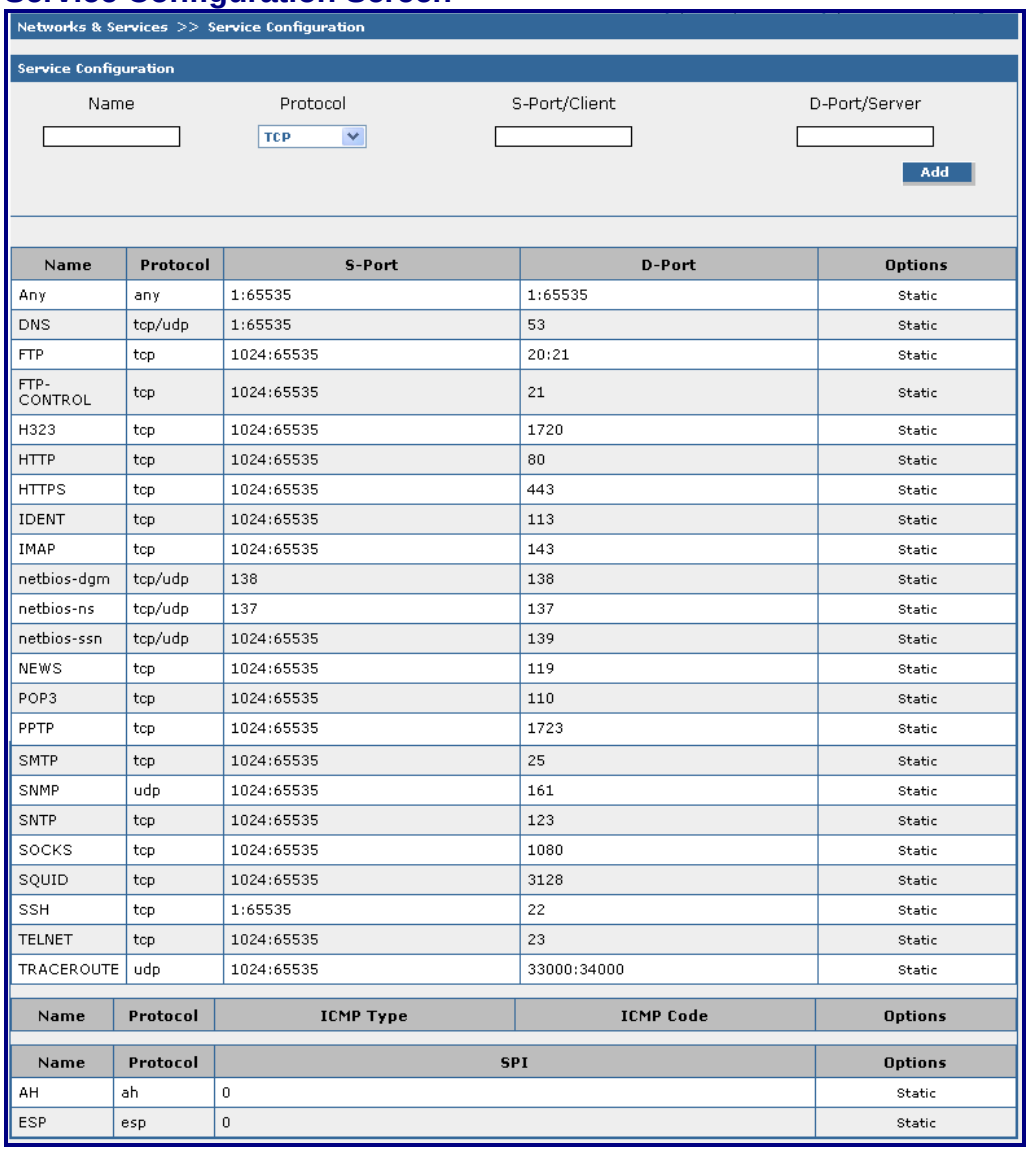
Networks & Services › Service Configuration

On this screen you can specify the standard set of well known services available on the system. These services enable the configuration of the user defined services. The options to Delete or Edit a service after it has been defined and added are available by using the table at the bottom of the screen. However, standard sets of well known services cannot be edited or deleted.

Service Entries on This Service Configuration Screen Will Display on the Following Screens

Packet Filters > Packet Filter Rules
Packet Filters > Advanced Filters > MAC Address Based Filtering
Network Setup > SNAT, DNAT

Service Configuration Screen



Networks & Services >> Service Configuration

Service Configuration

Name | Protocol (TCP) | S-Port/Client | D-Port/Server | Add

Name	Protocol	S-Port	D-Port	Options
Any	any	1:65535	1:65535	Static
DNS	tcp/udp	1:65535	53	Static
FTP	tcp	1024:65535	20:21	Static
FTP-CONTROL	tcp	1024:65535	21	Static
H323	tcp	1024:65535	1720	Static
HTTP	tcp	1024:65535	80	Static
HTTPS	tcp	1024:65535	443	Static
IDENT	tcp	1024:65535	113	Static
IMAP	tcp	1024:65535	143	Static
netbios-dgm	tcp/udp	138	138	Static
netbios-ns	tcp/udp	137	137	Static
netbios-ssn	tcp/udp	1024:65535	139	Static
NEWS	tcp	1024:65535	119	Static
POP3	tcp	1024:65535	110	Static
PPTP	tcp	1024:65535	1723	Static
SMTP	tcp	1024:65535	25	Static
SNMP	udp	1024:65535	161	Static
SNTP	tcp	1024:65535	123	Static
SOCKS	tcp	1024:65535	1080	Static
SQUID	tcp	1024:65535	3128	Static
SSH	tcp	1:65535	22	Static
TELNET	tcp	1024:65535	23	Static
TRACEROUTE	udp	1024:65535	33000:34000	Static

Name	Protocol	ICMP Type	ICMP Code	Options

Name	Protocol	SPI	Options
AH	ah	0	Static
ESP	esp	0	Static

This is an example of screen with the TCP protocol selected.

Service Configuration

Name

Enter the name of network or host you want added to the list. This name has to unique; in other words, it should not be present in the displayed list. A space cannot be used in the name; it is considered an invalid character. After you have entered the name, click the **Add** button.

Protocol

Select from the following protocols: **TCP, UDP, TCP & UDP, ICMP, AH,** and **ESP**. When you select one of the protocols, the fields to the right will change according to the protocol selected.

TCP, UDP, and TCP& UDP

S-Port/Client

Enter the source port for the service. The entry options are a single port (e.g. 80), a list of port numbers separated by commas (e.g. 25, 80, 110), or a port range (e.g. 1024:64000) separated by a colon (**:**).

D-Port/Server

Enter the Destination port.

ICMP

ICMP Type

Choose the Type from the drop down box.

ICMP Code

Choose the Code from the drop down box.

AH and ESP

SPI Value

Enter the SPI value.

Editing and Deleting User-Added Services

There are options for editing or deleting the user added services. However, there are some standard services which cannot be edited or deleted. If the service is used by the Packet Filter rules, SNAT, or DNAT, it cannot be deleted.

For editing any user-defined service, the **Edit** button has to be clicked to get the fields corresponding to the service entry.

Edit By clicking **Edit** in the Options column, the information is loaded into the entry menu of the **Edit Service** screen. You can then edit the entry. You can edit user-added services only. The entries can be saved using the **Save** button.

Delete By clicking **Delete** in the Options column, the service is deleted from the Services table. Changes can be saved using the **Save** button.

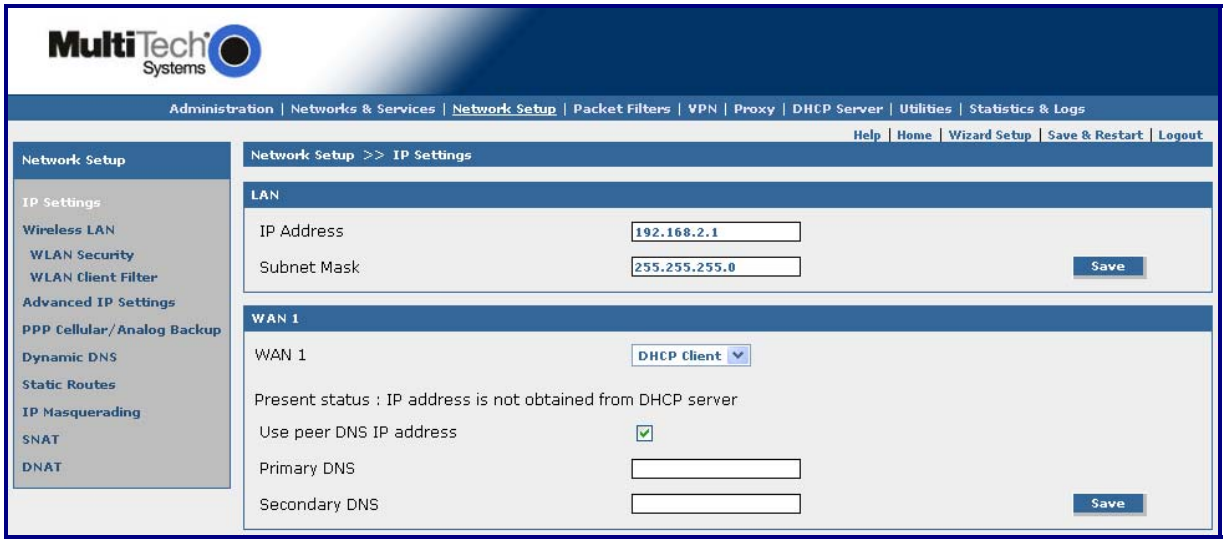
Notes About Protocols

- **TCP & UDP** allow both protocols to be active at the same time.
- The **ICMP** protocol is necessary to test network connections and RouteFinder functionality, as well as for diagnostic purposes. In the *Packet Filter* > *ICMP* menu you can enable *ICMP Forwarding* between networks, as well as RouteFinder ICMP reception (e.g., to allow **ping** support).
- The **ESP** protocol is required for Virtual Private Network (VPN).
- The **AH** protocol is required for Virtual Private Network (VPN).
- For **AH** and **ESP**, the **SPI** is a whole number between 256 and 65536, which has been mutually agreed upon by the communication partners. Values below 256 are reserved by the Internet Assigned Numbers Authority (IANA).

Network Setup

Network Setup › IP Settings

Network > IP Settings Screen



LAN

IP Address
192.168.2.1 defaults into this field.

Subnet Mask
255.255.255.0 defaults into this field.
These should be acceptable for your site.

WAN

Select the way the IP Address should be assigned for the WAN link. The default is **DHCP Client**. When you select **Static IP** or **PPPoE**, the input fields change.

WAN Choice: DHCP Client (Default)

DHCP (Dynamic Host Configuration Protocol) is a protocol that allows individual devices on an IP network to get their own network configuration information (IP address, subnet mask, broadcast address, etc.) from a DHCP server.

Present Status
If the DHCP client is not enabled, the following message displays: *Present Status: IP address is not obtained from DHCP server.* If DHCP client is enabled, and if the IP address has been assigned by the DHCP server, then the following values will be displayed on the page:

Assigned IP Address
Mask
DHCP Server Address
DNS Address
Gateway Address
Lease to be Renewed on (the time that the DHCP client should begin to contact its server to renew the lease it has obtained)
Lease Expires on (time at which the DHCP client must stop using the lease if it has not been able *to contact a server in order to renew it)*

Use Peer DNS IP Address
Check this box if you want the DNS server addresses from the peer (DHCP server) is to be obtained; otherwise, it should be unchecked. The DNS address obtained from the DHCP Server will display on this screen.

WAN Choice: Static IP

If you choose Static IP for WAN, the IP Address (default is 192.168.100.1) and the Subnet Mask (default is 255.255.255.0) fields displays.
Enter the *Default Gateway*, the *Primary DNS* address and the *Secondary DNS* address for the IP address provided.

Default Gateway
Enter the default gateway address. Default: 192.168.100.1

Primary DNS
In this field, enter a primary domain server name (DNS). DNS (Domain Naming System) allows you to enter a name (i.e., mydomain.com) to be used in place of the computer's numeric IP address.

Secondary DNS
In this field, enter a secondary domain server name.

WAN Choice: PPPoE

PPPoE (Point-to-Point Protocol over Ethernet) is a specification for connecting multiple users on an Ethernet local area network to a remote site through DSL or cable modems or wireless connection to the Internet. The following fields display when you select PPPoE:

User Name

Enter the ADSL user name give by the ISP.
Example: user1@xyz.com or user 1

Password

Enter the user's password.
These characters are not allowed: <, >.
Maximum characters allowed are 18.

Retype Password

Retype the password to confirm the one entered above. Passwords must match in order to continue. If you receive an error, enter password in both fields again.

Idle Time

This option is available only when the Connection Type is *Trigger on Demand*. Specify the inactivity time (in seconds) after which the PPPoE link should be brought down.

Connection Type

Specify the type of connection for the link. Options are:
Always Connect: The link will always be established. It is not dependent on whether or not there is data or a traffic flow through the RouteFinder. **Default.**
Trigger on Demand: The link will be established only when there is data or a traffic flow through the RouteFinder.

Dynamic IP Address from ISP

Check the box to enable the Dynamic IP address from the ISP. If enabled, the IP address obtained from the ISP is dynamic. If disabled, enter the IP address and subnet mask from the ISP in the following *Fixed Address* fields:

IP Address
Subnet Mask

Note: If the ISP does not support the Fixed Address option, then the RouteFinder will accept the dynamic IP address provided by the ISP.

Accept DNS Address from Peer

Check this box if you want the DNS server address to be obtained from the peer (the ISP). The DNS address obtained from the ISP will be displayed on the *Network Setup* > *Interface* screen. The details of the address/subnet mask obtained from the ISP are displayed as the Present Status on this screen.

MTU

A Maximum Transmission Unit (MTU) is the size (in bytes) of the largest packet that can be passed onwards. To read more about MTU, see the following Web site:
The default for this field is 1412, which should be acceptable for most applications.
http://en.wikipedia.org/wiki/Maximum_transmission_unit
Also see the hyperlinked references listed on this Web site.

Primary DNS

In this field, enter a primary domain server name (DNS). DNS (Domain Naming System) allows you to enter a name (i.e., mydomain.com) to be used in place of the computer's numeric IP address.

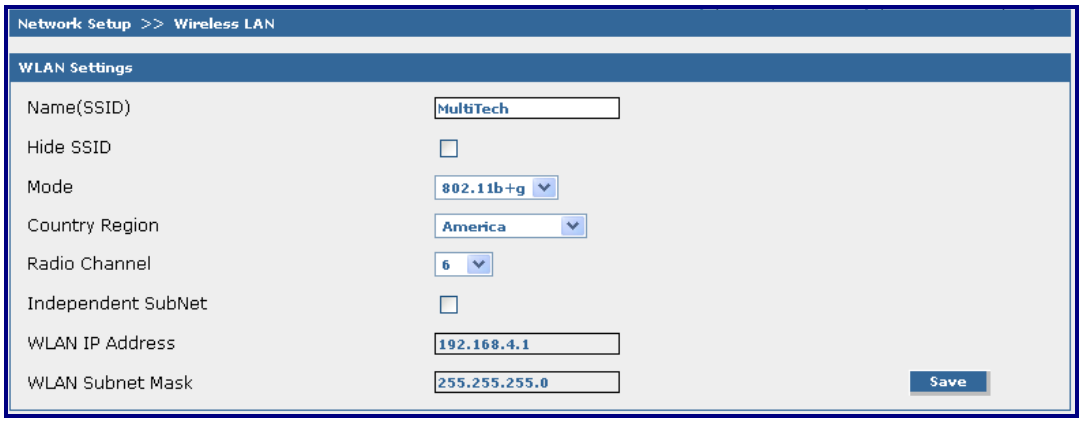
Secondary DNS

In this field, enter a secondary domain server name. The servers are consulted in the order in which they are configured.

Network Setup › Wireless LAN

Screen Note: This screen applies to the RF825-AP only.

Use the following screen to setup the wireless LAN (WLAN) interfaces.



WLAN Settings

Name (SSID)

An SSID is the name of a wireless local area network (WLAN). All wireless devices on a WLAN must employ the same SSID in order to communicate with each other. SSIDs are case sensitive, consist of a sequence of alphanumeric characters (letters and numbers), and have a maximum length of 32 characters. Example: Multi-Tech.

Hide SSID

Check this box to hide the SSID.

Mode

Select the Wi-Fi mode. Mode ***g*** supports a maximum speed of 54M bps. Mode ***b*** supports a maximum speed of 11M bps. Mode ***b+g*** is compatible with both ***b Only Clients*** as well as ***g Clients***.

Country or Region

Choose the Country or Region in which this device will be used.

Radio Channel

Select the Radio Channel allowed in the selected country or region.

Independent Subnet

Check this box if you would like the Wireless LAN located on a different Network from the default LAN Network.

When you check this box and **Save** this screen, you will be able to set up a separate Network subnet address for the wireless LAN. You might want to use this to give a certain workstation access to the Internet and not to the local network or *vice versa.*

Additionally, once the Independent Subnet box is checked, the following options become available on the *DHCP Server* sub-menu for setting up the separate subnet address:

Wireless LAN
WLAN Subnet Settings
WLAN Fixed Addresses

WLAN IP Address

Specify the IP Address of the WLAN Interface.

WLAN Subnet Mask

Specify the WLAN Subnet Mask.

Network Setup › Wireless LAN › WLAN Security

Screen Note: This screen applies to RF825-AP only.

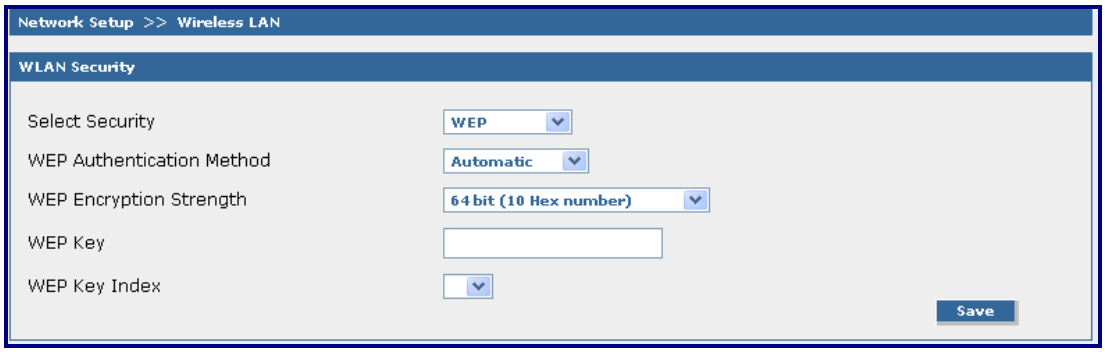
Select the Security option for the Wireless LAN network. The default is *Disable*.

WLAN Security

Select Security

Select the Security option from the drop down box for the Wireless LAN network. Each selection will display a separate set of input fields.

- **Security Selection – Disable**
  This option provides no security for the WLAN network.
- **Security Selection – WEP**



WEP (Wired Equivalency Privacy) offers the privacy equivalent to that of a wired LAN. If activated, data is encrypted before transmission, and then the receiving station, such as an access point or another radio, performs decryption upon arrival of the data. 802.11 WEP encrypts data only between 802.11 stations.

WEP Authentication Method

Automatic – Automatic authentication allows any wireless station configured with the Open System / Shared Key authentication method to associate with the AP.

Open System – Using Open Authentication, any wireless station can request authentication. Open Authentication allows any device access to the network.

Shared Key – Using Shared Authentication, each wireless station is assumed to have received a secret shared key over a secure channel that is independent from the 802.11 wireless network communications channel. Shared Key Authentication requires that the client configure a static WEP key. The client is granted only if it passed a challenge-based authentication.

WEP Encryption Strength

The choices are:
64 bit (10 Hex number)
64 bit (5 ASCII characters)
128 bit (26 Hex number)
128 bit (13 ASCII characters)

WEP Key

The WEP Key is used to encrypt/decrypt the data. Enter the Key value based on the WEP Encryption Strength.

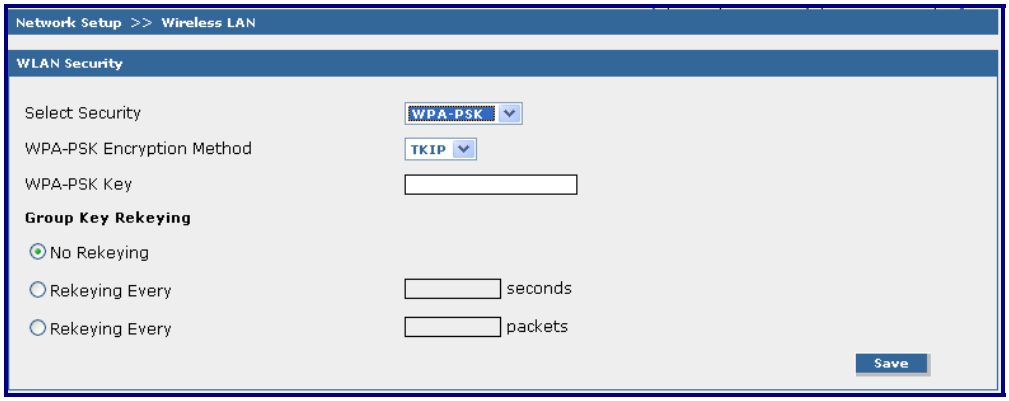
WEP Key to Index

The Key Index shows in which order the WEP Key values are stored.
Example: *WEP Key Index: 1*
This means that the WEP Key is stored as the first WEP Key in the configuration.

- **Security Selections – WPA-PSK and WPA2-PSK**

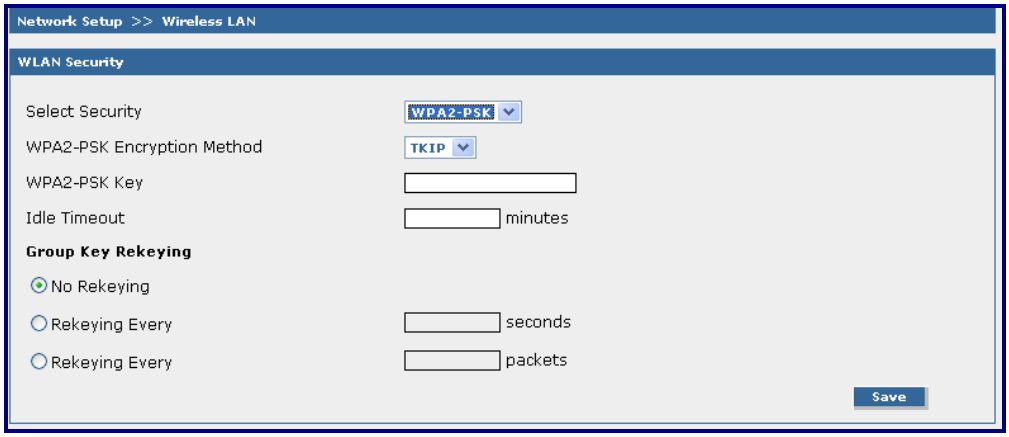
This is the WAP-PSK screen.

Screen Note: This screen applies to RF825-AP only.



This is the WPA2-PSK screen.

Screen Note: This screen applies to RF825-AP only.



Wi-Fi Protected Access (WPA) is a class of systems to secure wireless (Wi-Fi) computer networks. WPA is designed for use with an IEEE 802.1x authentication server, which distributes different keys to each user. However, it can also be used in a less secure "pre-shared key" (PSK) mode in which every user is given the same passphrase. Pre-Shared Key mode (PSK, also known as personal mode) is designed for home and small networks that cannot afford the cost and complexity of an 802.1x authentication server. Each user must enter a passphrase to access the network.

WPA-PSK/WPA2-PSK Encryption Method

Select an encryption method. The choices are:

TKIP – TKIP (Temporal Key Integrity Protocol) is a security protocol used in Wi-Fi Protected Access (WPA).

AES – AES (Advanced Encryption Standard), also known as Rijndael, is a block cipher adopted as an encryption standard.

WPA-PSK/WPA2-PSK Key

Enter a sequence of digits to be used for your preshared key. The WPA preshared key should be a random sequence of hexadecimal digits between 8 and 63 digits.

Idle Timeout (for WPA2-PSK only)

Enter the amount of idle time in minutes that will pass before the Key will timeout (for the WPA2-PSK Key only).

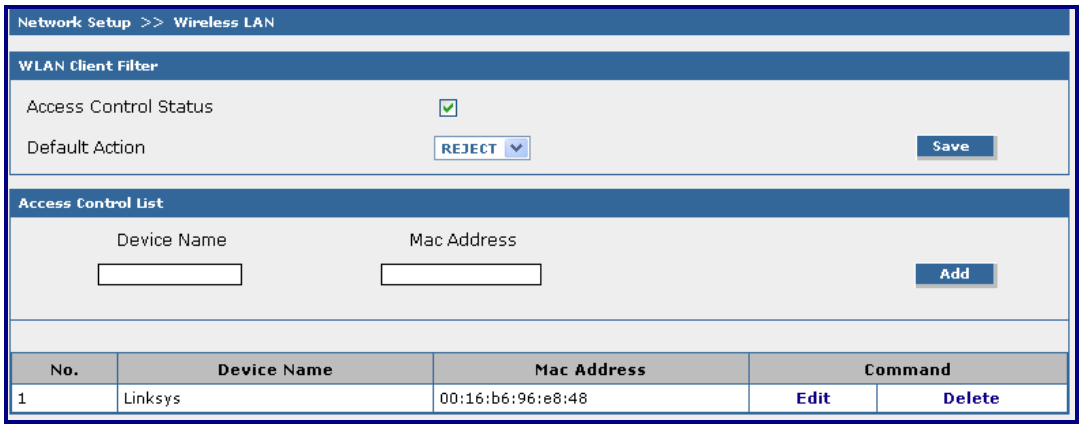
Group Key Rekeying

The encryption keys are automatically changed (called rekeying) and authenticated between devices after a specified period of time or after a specified number of packets has been transmitted. This is called the rekey interval.

Select either **No Rekeying**, **Rekeying Every** (number of seconds and enter the number of seconds desired), or **Rekeying Every** (number of packets and enter the number of packets desired).

Network Setup › Wireless LAN › WLAN Client Filter

Screen Note: This screen applies to the RF825-AP only.



WLAN Client Filter

The WLAN Client Filter is used to Allow/Reject the wireless station's association with the Access Point.

Access Control Status

Check this box to enable Access Control on the WLAN.

Default Action

Choices are:

ALLOW – Select this to allow the WLAN Client based on the Access Control list.

REJECT – Select this to deny the WLAN Client based on the Access Control list.

Access Control List

Device Name

Enter the name of the device that will be allowed access to the WLAN.

Mac Address

Enter Mac Address of the device that will be allowed access to the WLAN.

Add Button

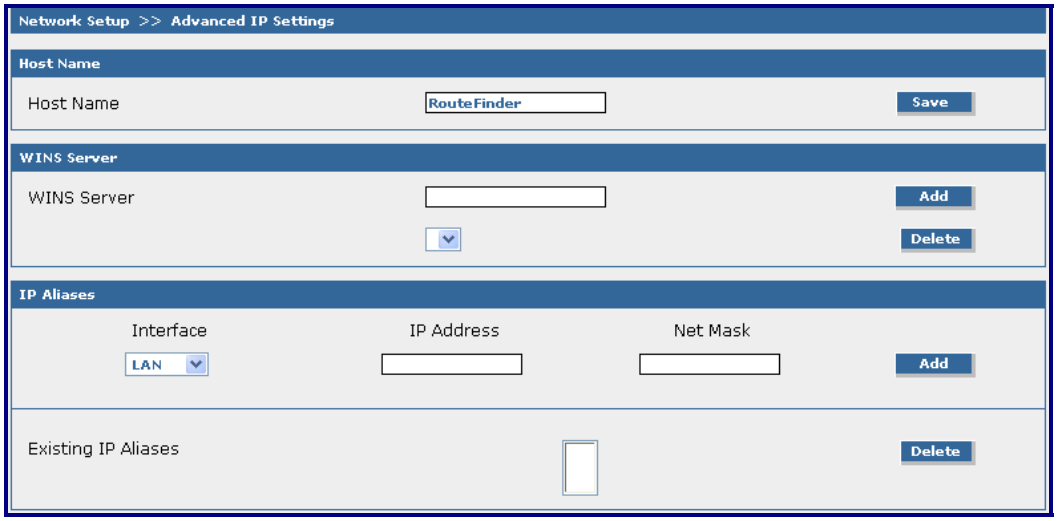
Click the **Add** button after the Device Name and Mac Address have been entered. They will then display at the bottom of the screen.

Add/Edit/Delete

The maximum number of devices allowed on the Access Control List is 20.
You can **Edit** and **Delete** clients from the list at the bottom of the screen.

Network Setup › Advanced IP Settings

Specify the Host Name, the External Server for the system and the IP Aliases for each of the interfaces.



Host Name

The Host Name must be defined for your RouteFinder. The name must be entered into this format: FIREWALL.mydomain.com. Click the **Save** button.
Example: Localhost.xscale.com

WINS Server

Enter a name for the WINS Server. Click the **Add** button.

IP Aliases

Multiple IP addresses can be assigned to a network interface using IP Aliases. The RouteFinder will treat the additional addresses as equals to the primary network card addresses. IP aliases are required to administer several logical networks on one network card. They can also be necessary in connection with the SNAT function to assign additional addresses to the firewall.
Note: The same IP Address cannot be configured many times for an interface. Similarly, the same IP Address cannot be entered as an IP Alias Address for two different interfaces.

Interface

From the drop down list box, select the network name to which you want to assign an alias.

IP Address

Enter the network IP address for the network named.

Netmask

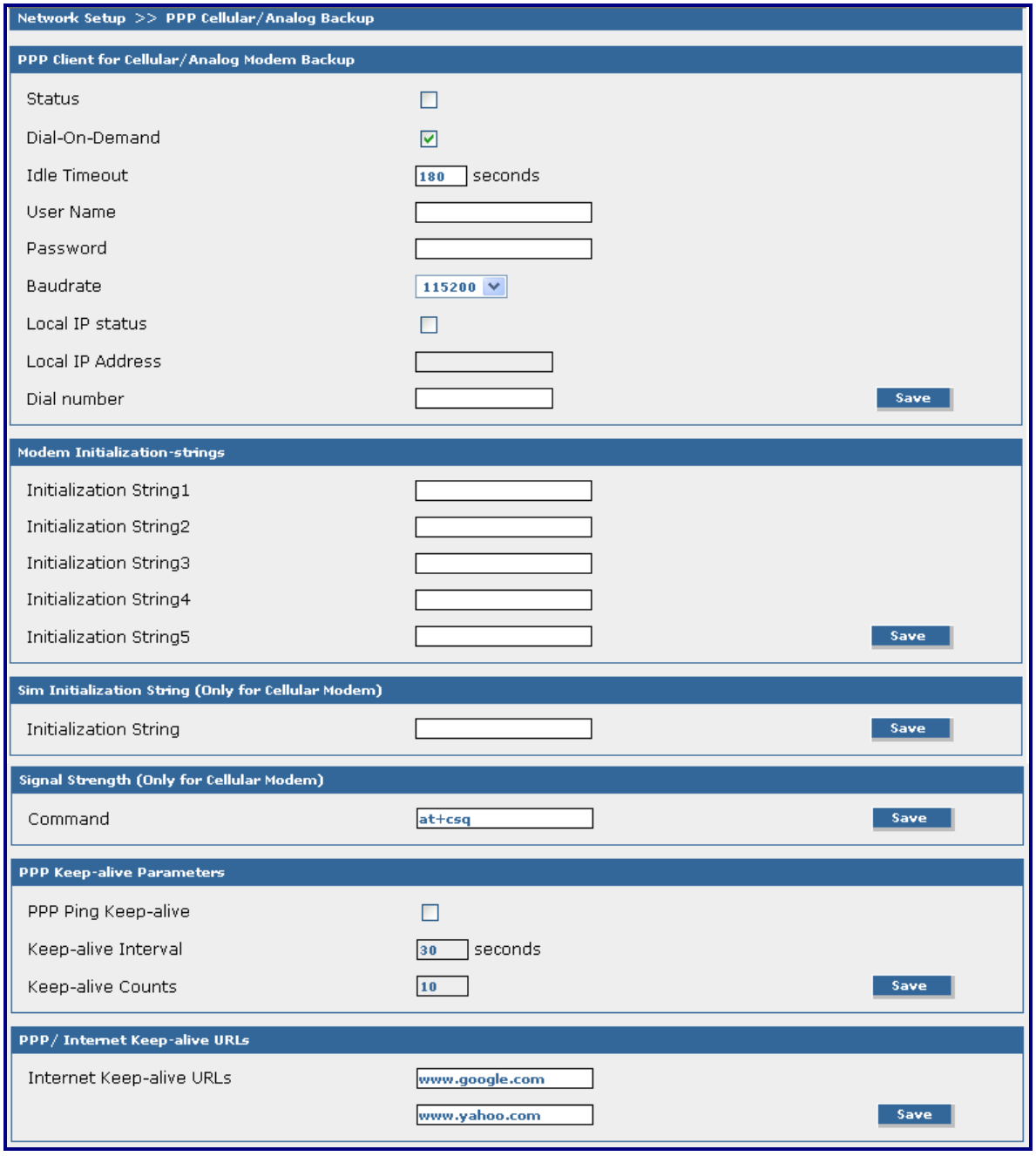
Enter the Netmask to be used for this network.

Save and Delete

Click the **Save** button when finished. An IP alias is deleted by highlighting it in the table and then clicking the **Delete** button.

Network Setup › PPP Cellular/Analog Backup

The PPP link is used as a backup link to the WAN interface. If the **Internet Keep-alive URLs** (see below) are not reachable through the WAN Ethernet interface, the PPP backup link automatically comes up and the system regains its connection to the ISP.



PPP Client for Cellular/Analog Modem Backup

Status

Check this box to enable PPP Dial Backup on WAN interface.

Dial-On-Demand

Check this box to initiate dial-on-demand, which automatically makes the connection when there is traffic. (Disable this to stay connected at all times).

Idle Timeout

Enter the amount of time in seconds that you want to elapse before the link will disconnect. The link will stay connected as long as there is traffic.

User Name
Enter the user name to authenticate the RouteFinder with the ISP. The *User Name* is optional.

Password
Enter the user password. These special characters cannot be used: <, >. The *Password* is optional.

Baud Rate
Select the serial baud rate from the drop down box. Select 115200 for CDMA; 230400 for EDGE.

Local IP Status
Check this box to enable support for negotiating an IP address with the ISP (this address will be enter in the next field).

Local IP Address
Enter the IP address from which the RouteFinder can negotiate for a certain IP address from the ISP.

Dial Number
Enter the dialup number. For CDMA, type **#777**. For EDGE, type ***99***1#**

Note: When the backup link comes up or goes down, an email is sent to the administrator.

Click the **Save** button after all the above information is entered.

Modem Initialization Strings
Initialization Strings
Enter the modem initialization string. An initialization (init) string is a list of commands sent to the modem to initialize and prepare it for a connection. The init string typically sets options such as speed, error correction, compression, various timeout values, and how to display results to the user. For EDGE, type **AT+CGDCONT=1,"IP","<APN>"** (CDMA does not need an initialization string).
Note: The APN (Access Point Name) is assigned by your wireless service provider. An access point is an IP network to which a mobile device can be connected.
Click the **Save** button after the initialization strings are entered.

SIM Initialization String (for GSM/EDGE Cellular only)
Initialization String
Enter the SIM initialization string. The SIM initialization string is sent to the cellular modem during boot up in order to initialize the Cellular SIM. This is not applicable for analog modems. Click the **Save** button after the initialization string is entered.

Signal Strength (for Cellular only)
Command
Enter the command or use this default command to find out the cellular signal strength. This is not applicable for analog modems. Click the **Save** button.

PPP Keep-Alive Parameters
PPP Ping Keep-Alive
Check this box to enable the PPP Keep-Alive function on the dial backup link. Once the link is up, this option checks whether the PPP link is alive or not by periodically pinging to the Keep-Alive URLs at a specified interval. This will not occur when the link is down.

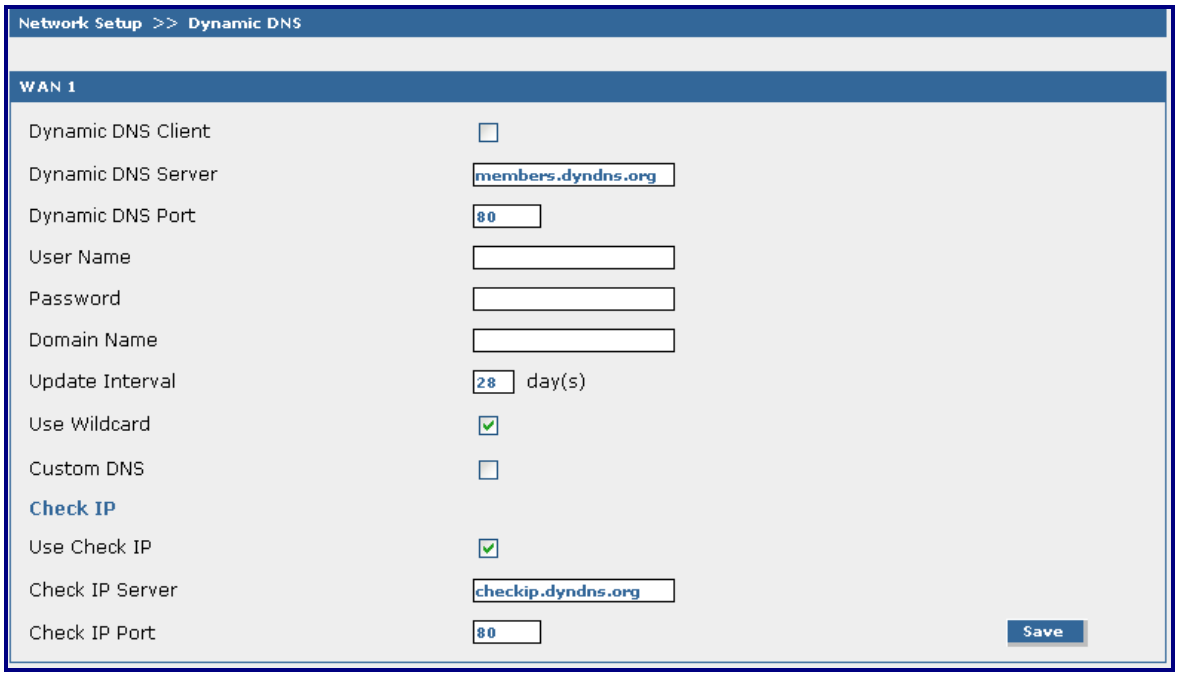
Keep-Alive Interval
Enter the amount of time in seconds that the pinging to the Keep-Alive URLs should occur.

Keep-Alive Counts
Enter a number that specifies how many ping packets should be sent to each URL. The default is 10. Click the **Save** button.

PPP/Internet Keep-Alive URLs
Internet Keep-Alive URLS
The two URLs you enter here will be used to check to see if the Internet is reachable through the WAN/PPP links. If the Internet is not reachable through the WAN link, then the link is assumed to be down and all the traffic will be forwarded through the PPP link. The same URLs are used for the PPP Keep-Alive function. These URLs can either be a valid domain or a valid Public IP address. Example: www.google.com. Click the **Save** button.

Network Setup › Dynamic DNS

The DDNS Client is used to update the IP address of the modem/router in a DDNS server for the configured domain name whenever the IP Address changes, thus, leaving the domain name to be pointing to the current IP Address of the modem/router all the time.



WAN

Dynamic DNS Client

Check the box to enable DDNS Client. Default = Disable.

Dynamic DNS Server

Enter the name of the IP Server to which obtained IP addresses will be registered.

Dynamic DNS Port

Enter the port number through which the DDNS has to update the server. By default, port 80 is used. This port is configurable.

User Name

Enter the name of the user who will be allowed access the DDNS Server.

Password

Enter the Password the user will use to access the DDNS Server.

Domain Name

Enter the domain name registered with the DDNS server. The external world reaches the RouteFinder when the Domain Name is configured.

Update Interval

Enter the interval in days after which the IP Address will be updated by the DDNS server. Default: 28 days.

Use Wildcard
If this option is enabled, subdomains of the registered domain will also be resolved to the same IP address. For example, if test.dyndns.org has been registered and the IP address it is resolved to is a.b.c.d, all subdomains like dns.test.dyndns.org will also get resolved to a.b.c.d. However, this will work only if the dynamic DNS server supports this option.

Custom DNS
If enabled, this option specifies the domain name registered is of custom type. Also, its specified server belongs to custom type.

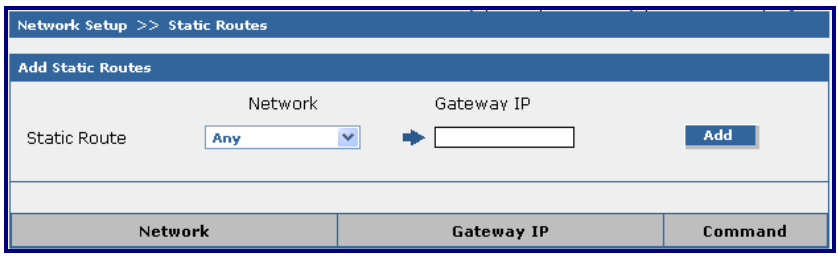
Use Check IP
If enabled, this option specifies that the RouteFinder will use the *Check IP* utility to verify the IP addresses that are already registered for the domain name configured.

Check IP Server
Enter the name of the IP Address of the *Check IP* server.

Check IP Port
Enter the number of the port which the *Check IP* utility connects to the server.

Network Setup › Static Routes

Routing information is used by every computer connected to a network to identify whether it is sending a data packet directly to the firewall or passing it on to another network. This screen can be used to describe the networks to be reached through a configured gateway.



Add Static Routes

Static Route Network

Select a defined network from the drop down list.

Static Route Gateway IP

Enter the external IP address which will act as a gateway for this network. The entries are added by clicking the Add button. The entry will then display at the bottom of the screen.

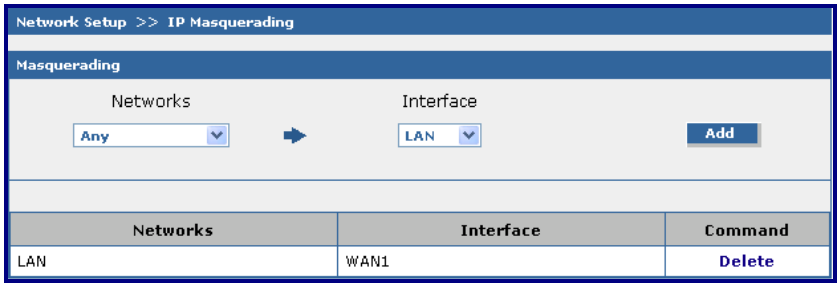
The options to Delete or Edit a route after it has been defined and added are available will become available after the network and Gateway IP are added.

Important: The Static Route screen will not display until the network is defined in *Networks & Services.*

Network Setup › IP Masquerading

Masquerading is a process that allows attaching of private networks to public networks. Since private addresses are not routed to the Internet, a source NAT on the RouteFinder's external interface is required. Masquerading enables the user to enter only one source network. Also, if the external interface's IP address keeps changing (as in the case of a DHCP client or PPPoE connections) the user need not keep changing the masquerading rule.

On this screen you can select networks or network groups to be masked. Masquerading is especially useful for connecting private networks to the Internet. It allows you to hide internal IP addresses and network information from the outside network.



Networks

Select a defined network from the drop down list.

Interface

The selected Network will be masqueraded with the interface selected from this drop down list. Example: network1 > WAN; Defaults: LAN > WAN

Add

Click the **Add** button. The Masqueraded network route will display on the bottom part of the screen.

Edit or Delete a Route

A Masqueraded network route can be edited or deleted. When deleting a Masqueraded network route, the interface adapts accordingly.

Network Setup › SNAT

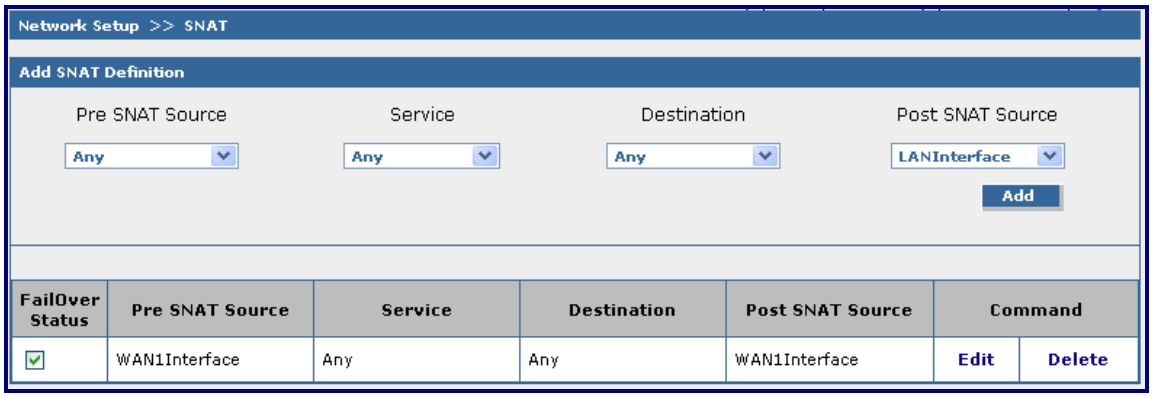
The SNAT (Source Network Address Translation) process allows attaching private networks to public networks. SNAT is used when you want to have a LAN using a private IP network to be connected to the internet via a firewall. Since the private IP addresses are not routed on the internet, you have to apply SNAT on the firewall's external interface.

The RouteFinder's internal interface serves as the default gateway for the LAN. Hence, a rule is added to the RouteFinder to replace the source address of all packets crossing its external interface from inside to outside with the RouteFinder's own interface IP address. Once the request gets answered from the Internet host, the RouteFinder will receive the reply packets and will forward them to the client on the LAN.

On this screen you can set up the RouteFinder's ability to rewrite the source address of in-transit data packages using SNAT. This functionality is equivalent to DNAT, except that the source addresses of the IP packets are converted instead of the target addresses being converted. This can be helpful in more complex situations (e.g., diverting reply packets of connections to other networks or hosts).

Important

- For SNAT support, the TCP and/or UDP settings must be enabled in the *Networks* menu.
- As the translation takes place after the filtering by packet filter rules, you must allow connections that concern your SNAT rules in *Packet Filters* > *Packet Filter Rules* with the original source address. Packet filter rules are covered later in this chapter.
- To create simple connections from private networks to the Internet, you should use the *Network Setup* > *Masquerading* function instead of SNAT. In contrast to Masquerading, SNAT is a static address conversion, and the rewritten source address does not have to be one of the RouteFinder's IP addresses.



Add SNAT Definition – From the drop down lists, select IP packet characteristics to be translated.

Pre SNAT Source

Select the original source network of the packet. The network must be predefined in the *Networks* menu. The entry is confirmed by clicking the **Add** button. Existing entries can be deleted or edited.

Service

Allows the corresponding service for the Pre SNAT Source entry field to be chosen from the select menus. The service must have already been defined in the *Services* menu.

Destination

Select the target network of the packet. The network must have been defined in the *Network* menu. The entry is confirmed by clicking the **Add** button. Existing entries can be deleted or edited by clicking the **Edit** or the **Delete** buttons.

Post SNAT Source

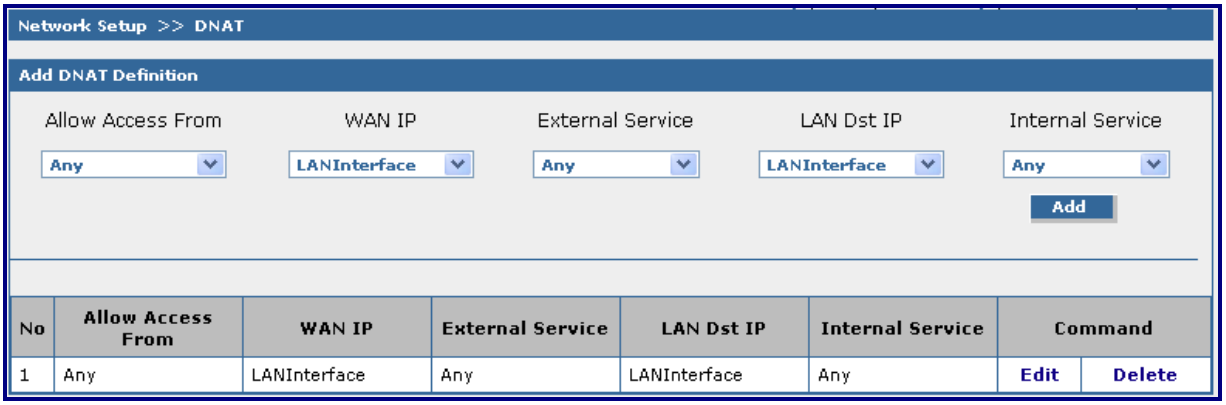
Selects the source addresses of all the packets after the translation. Only one host can be specified here. The entry is confirmed by clicking the **Add** button. Existing entries can be deleted or edited by clicking the **Edit** or the **Delete** buttons.

Network Setup › DNAT

The DNAT (Destination Network Address Translation) process allows placing servers within the protected network and making available for a certain service to the outside world. Normally, the RouteFinder has a network server running in the LAN providing a network service with an address in the specified range, and wants this service accessible to the outside world. The DNAT process running on the RouteFinder translates the destination address of incoming packets to the address of the real network server on the LAN. The packets then get forwarded.

Important Notes:

- A DNAT rule with the Pre-DNAT Network as *ANY,* a Service as *ANY*, and a Destination Service as *ANY* cannot be added. This will cause all the packets to be routed to the system with Post DNAT network and services in the RouteFinder will not function properly.
- As the address conversion takes place BEFORE the filtering by the packet filter rules, you must set the appropriate rules in the *Packet Filter* > *Packet Filter Rules* menu to let the already-translated packets pass. You can find more about setting packet filter rules earlier in this chapter.



Add DNAT Definition

Allow Access From

Select the source network/host to which the DNAT rule will apply.

WAN IP

Select the original target host or network of the IP packets that are to be re-routed. This target host or network SHOULD BE reachable from the Internet. The network/host must have been defined in the *Networks* section of this software. Example: network1

External Service

Select the Pre DNAT service. The service must have been defined in the Services section of this software. Example: FTP, TELNET

LAN Dst IP

Select the designation to which IP packets are to be diverted. Only one host can be defined as the Post DNAT destination. Normally, this IP address is the service running on the private LAN segment. Example: host1

Internal Service

Select the service for the Post DNAT service. Example: FTP

Add

Click the **Add** button to save your choices.

Edit, Delete

After saving the settings, a table is created and displayed at the bottom of the screen. You can edit or delete entries by highlighting the desired entries and clicking either the **Edit** or **Delete** button listed under **Command**.

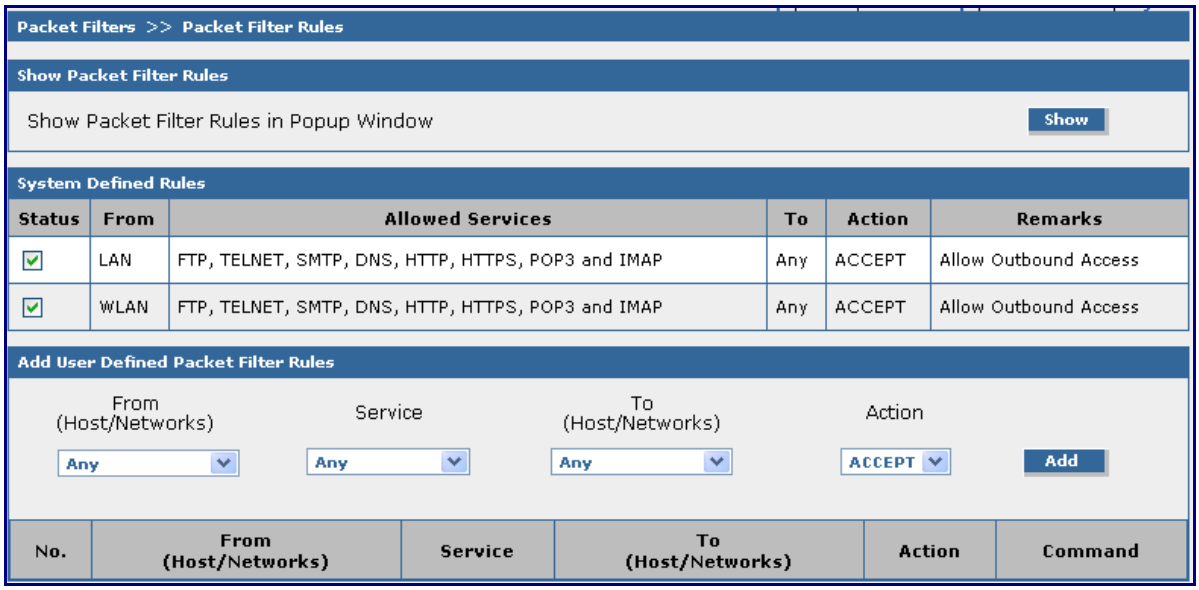
Packet Filters

Packet Filter › Packet Filter Rules

Packet filters are used to set firewall rules which define what type of data traffic is allowed across the RouteFinder's firewall. There are certain System Defined Rules that exist by default. In addition, you can specify whether particular packets are to be forwarded through the RouteFinder system or filtered. These rules are set with the help of network/host and service definitions that have already been set up in the **Networks** section.

Screen Note:

- **If the AP build is used, *WLAN* displays in the System defined rules.**



Show Packet Filter Rules in Popup Window

Clicking this button opens up a new window that displays the RouteFinder's live packet filter rules.

System Defined Rules

These rules define a set of common application services that are allowed outbound access through the RouteFinder's WAN interface. The services that come under this definition FTP, TELNET, SMTP, DNS, HTTP, POP3, IMAP, and HTTPS; they form the ***Default Outbound Service Group***. The Default Outbound Service Group is enabled by default.

Add User Defined Packet Filter Rules

New packet filter rules are created by choosing from four drop-down lists. All services, networks, and groups previously defined in Networks and Services are available for selection.

Click **Add** to create the rule; it then displays at the bottom of the table. The new rule automatically receives the next available number in the table. The overall effectiveness of the rule is decided by its position in the table. You can move the new rule within the table with the **Move** function in the **Command** column. You can also **Edit** and **Delete** rules.

Important Note about the Order of Rules:

The order of the rules in the table is essential for the correct functioning of the firewall. By clicking the **Move** button, the order of execution can be changed. In front of rule to be moved, enter the line number that indicates where the rule should be placed. Confirm by clicking **OK**.
By default, new rules are created at the end of the table.

From (Host/Networks)

Select the host/network from which the information packet must originate for the filter rule to match. The *Any* option, which matches all IP addresses regardless of whether they are officially assigned or private addresses, may also be specified. The networks/host must be pre-defined in the Networks section. Example: *network1* or *host1* or *Any*

Services

Select the service that is to be matched with the filter rule. These services must be pre-defined in the Services section. The default entry Any selects all combinations of protocols and parameters (e.g., ports). Example: *SMTP, ANY*

To (Host/Networks)

Select the host/networks to which the packet is to be sent in order for the filter rule to match. The *Any* option, which matches all IP addresses regardless of whether they are officially assigned or private addresses, may also be specified. The networks/host must be pre-defined in the Networks section. Example: *network2*, or *host 2* or *Any*

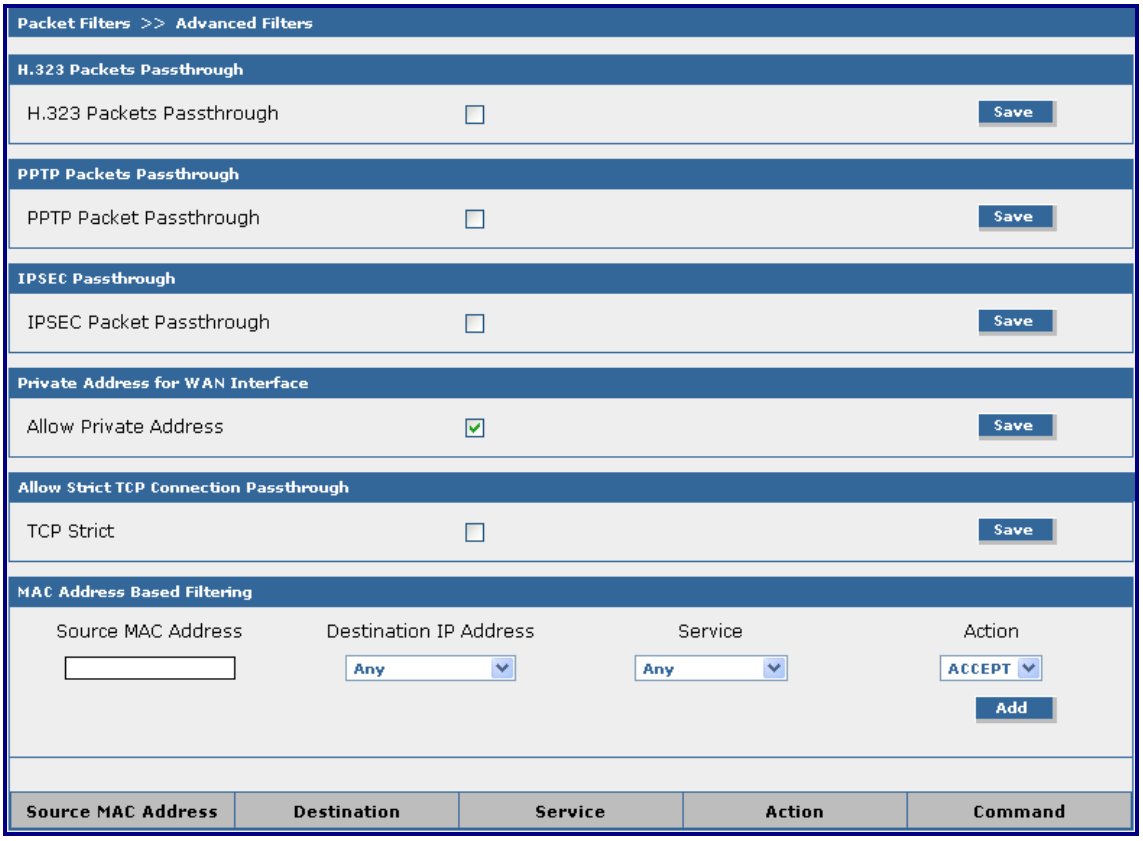
Action

Select the action that packet filter executes if the rule matches any traffic traversing the RouteFinder firewall. There are four types of actions:

- **Accept –** Allows/accepts all packets that match this rule.
- **Reject –** Blocks all packets that match this rule. The host sending the packet will be informed that the packet has been rejected.
- **Drop –** Drops all packets that match this rule, but the host is not informed. It will appear to the host that the destination address is not responding; in other words, it is a silent drop.
- **Log –** Packets matching the rule will be logged. Source address, destination address, and service will be logged. The logged messages are routed to the Remote Syslog Server if enabled in the Administration section.

Packet Filters › Advanced Filters

This section allows configuration of some advanced filter settings.



H323 Packets Passthrough

Check this box to enable the forwarding of H323 packets across the firewall.

PPTP Packets Passthrough

Check this box to enable PPTP Packets Passthrough (PPTP NAT support). This includes two features:

- Server behind the firewall and clients on the Internet – DNAT of PPTP packets.
- Client behind the firewall and server on the Internet – SNAT / masquerading of PPTP packets.

IPSec Packet Passthrough

Check this box to enable the forwarding of IPSec packets across the firewall.

Private Addresses on WAN Interface

Allow Private Addresses

By default, packets from the WAN interface of the RouteFinder destined to any private address will be dropped. Check this option to allow private addresses to pass through.

Allow Strict TCP Connection Passthrough

TCP Strict

By default, packets with invalid flag combinations or TCP Sequence numbers passing via the RouteFinder will be dropped. Check this option to allow these packets to pass through.

MAC Address Based Filtering

Use this section of the screen to allow filtering / forwarding of packets based on the source MAC address.
Note: MAC Address based rules will be applied to packets destined to the RouteFinder as well as packets forwarded by the RouteFinder.

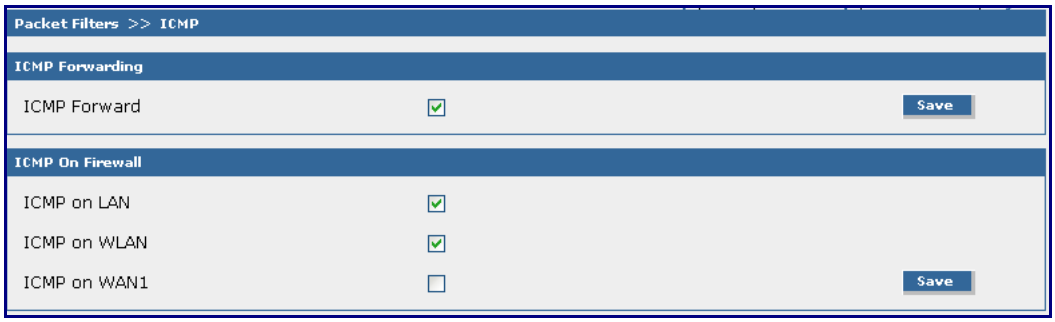
- Source MAC Address – Enter the MAC address of the source machine for this filter rule.
- Destination IP Address – Select the destination host/network this IP address will be sent.
- Service – Select the protocol-port pair for this filter rule.
- Action – Select the Action to be taken on this packet (Accept, Reject, Drop Log)

Packet Filter › ICMP

ICMP (Internet Control Message Protocol) is used to test the network connections and the functionality of the RouteFinder. It is also used for diagnostic purposes.

ICMP-on-Firewall and *ICMP Forwarding* always apply to all IP addresses (*Any*). When these are enabled, all IP hosts can PING the RouteFinder (ICMP-on-Firewall) or the network behind it (ICMP Forwarding). Unique IP addresses can then no longer be ruled out with packet filter rules. If the ICMP settings are disabled, separate IP hosts and networks can be allowed to send ICMP packets through the RouteFinder firewall by using appropriate *user defined packet filter rules*.

Screen Note: With the AP build, an additional field displays: *ICMP on WLAN*



ICMP Forwarding

Check the *ICMP Forward* checkbox to enable the forwarding of ICMP packets through the firewall into the local network and all connected DMZs. The default is *Enabled*.

ICMP on Firewall

ICMP on LAN

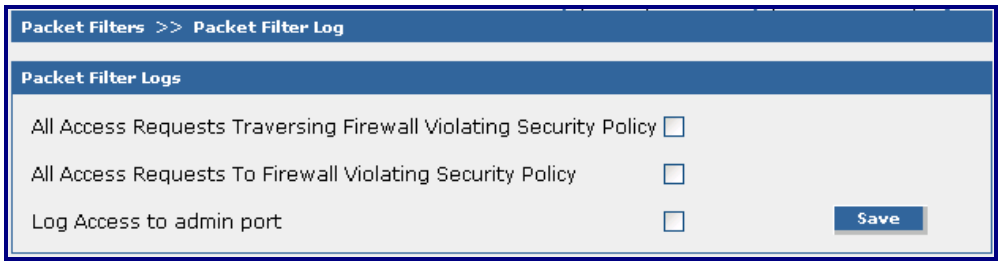
Check the *ICMP on LAN* checkbox to enable the forwarding of ICMP packets through the firewall into the local network and all connected DMZs. The default is *Enabled*.

ICMP on WAN1

Check the *ICMP on WAN1* checkbox to enable the transfer of ICMP packets on the WAN1 interface.

Packet Filter › Packet Filter Log

Use this section to enable or disable Packet Filter Logs.


Packet Filters >> Packet Filter Log
Packet Filter Logs
All Access Requests Traversing Firewall Violating Security Policy
All Access Requests To Firewall Violating Security Policy
Log Access to admin port
Save

All Access Requests Traversing Firewall Violating Security Policy

Check this box to enable the logging of all access requests from private (LAN) and public (WAN) network clients to traverse the RouteFinder that violate the configured security policy.

All Access Requests to Firewall Violating Security Policy

Check this box to enable the logging of all access requests from private (LAN) and public (WAN) network clients. This will send traffic that violates the configured security policy to the RouteFinder itself.

Log Access to Administrative Access Port

Check this box to enable the logging of all access requests from private (LAN) and public (WAN) network clients to send traffic to the RouteFinder itself on the administrative access port.

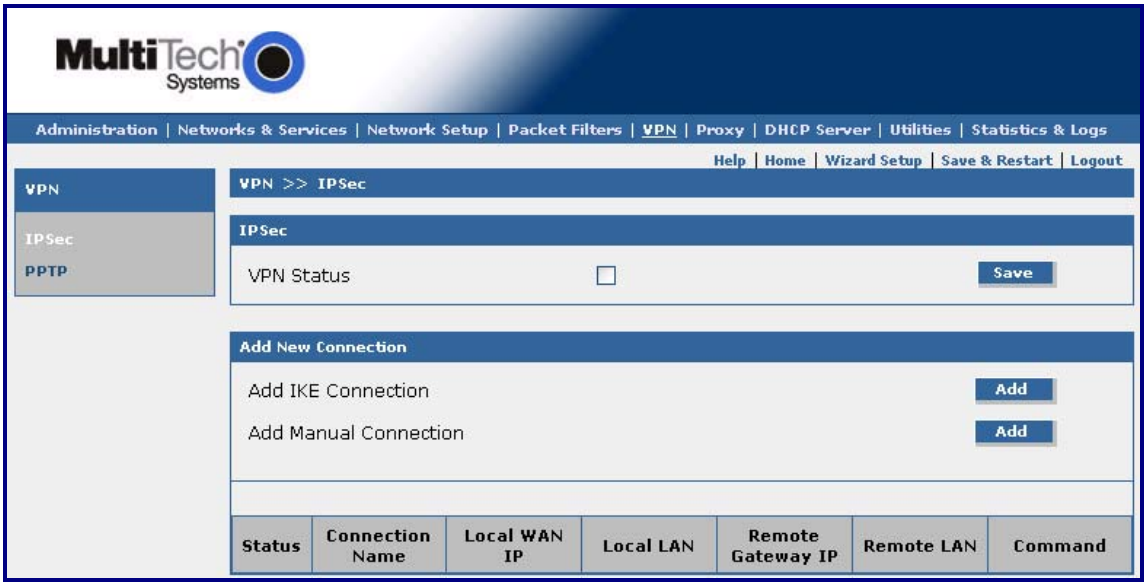
VPN (Virtual Private Network)

VPN › IPSec

Introduction to Virtual Private Networks

A Virtual Private Network (VPN) is a secure communication connection via an insecure medium – usually the Internet. A VPN is useful in situations where information is sent and received via the Internet and it is important that no third party can read or change that information. Such a connection is secured via VPN software that is installed at both ends of the connection. This software allows authentication, key exchange, and data encryption according to an open standard (IPSec).

The IPSec protocol suite, based on modern cryptographic technologies, provides security services like encryption and authentication at the IP network layer. It secures the whole network traffic providing guaranteed security for any application using the network. It can be used to create private secured tunnels between two hosts, two security gateways, or a host and a security gateway.



VPN IPSec

VPN Status

Check the VPN *Status* checkbox to enable IPSec. Click the **Save** button.

Add a New Connection

Add IKE Connection

Click the *Add IKE Connection* button. A screen displays for setting up an IKE connection.

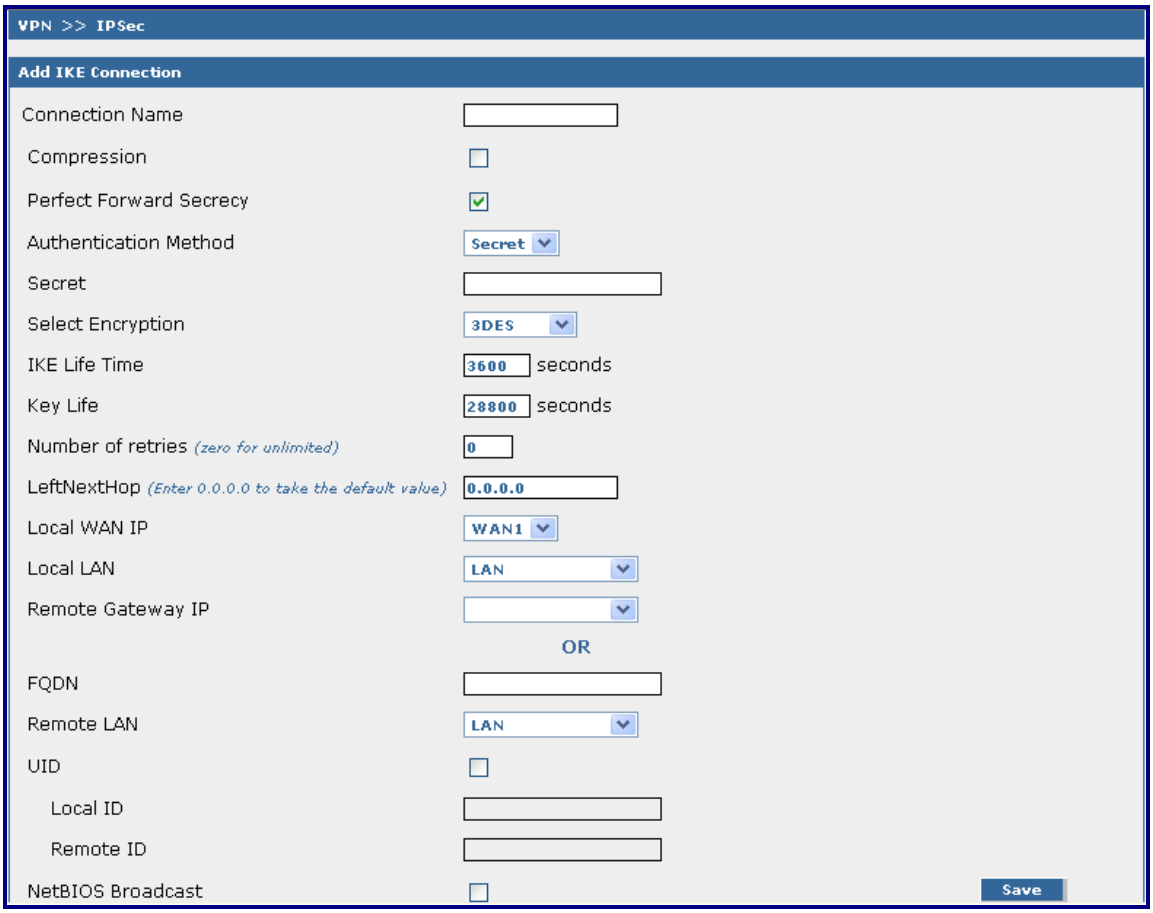
Add Manual Connection

Click the *Add Manual Connection* button. A separate screen displays for setting up a manual connection.

Important Note About Activating a Connection: Once connection information is entered, it will display at the bottom of this screen. Be sure to check the box in the **Status** column to activate the connection.

Add an IKE Connection

This section enables setting IPSec tunnels through an IKE connection.



Add IKE Connection

Connection Name

Enter a text name that will identify the connection for you.

Compression

Check the compression checkbox to enable IPCOMP, the compression algorithm.

Perfect Forward Secrecy (PFS)

Check the PFS checkbox to enable PFS, a concept in which the newly generated keys are unrelated to the older keys). This is enabled by default.

Authentication Method

Authentication can be done using Pre-Shared Secrets.

Secret

The Pre-Shared Secret must be agreed upon and shared by the VPN endpoints; it must be configured at both endpoints of the tunnel.

Select Encryption

Select the encryption method. 3DES is recommended. Options include: 3DES, DES, AES-128, AES-192, AES-256

IKE Life Time

The duration for which the ISAKMP SA should last is from successful negotiation to expiration. The default value is 3600 seconds and the maximum is 28800 seconds.

Key Life
The duration for which the IPSec SA should last is from successful negotiation to expiration. The default value is 28800 seconds and the maximum is 86400 seconds.

Number of Retries
Specify the number of retries for the IPSec tunnel. Enter zero for unlimited retries.

Left Next Hop
Next Hop is the address of the next device in a routing table's path that moves a packet to it's destination. This setting can be configured or left as a static value: 0.0.0.0. When not configured, the value is set to the Gateway of the Box/Gateway configured on the Interface/Right IP. The selection is based on the Left and Right IP.

Local WAN IP
This is the interface initiating the IPSec tunnel.

Local LAN
Internal subnet of the local security gateway for which the security services should be provided. If the RouteFinder acts as a host, this should be configured as None.

Remote Gateway IP
Interface where the IPSec tunnel ends. In the case of a Road Warrior with a Dynamic IP address, this should be configured to **ANY**.

FQDN
FQDN is a DNS resolvable fully qualified domain name with which identity the right peer can be identified. When FQDN is selected, the Remote Gateway IP should be blank.

Remote LAN
Internal subnet of the remote security gateway for which the security services should be provided. If the remote end is the host, this should be configured as None.

UID (Unique Identifier String)
Check the UID box to enable the Local ID and Remote ID. Local ID and Remote ID are active only when UID is enabled.

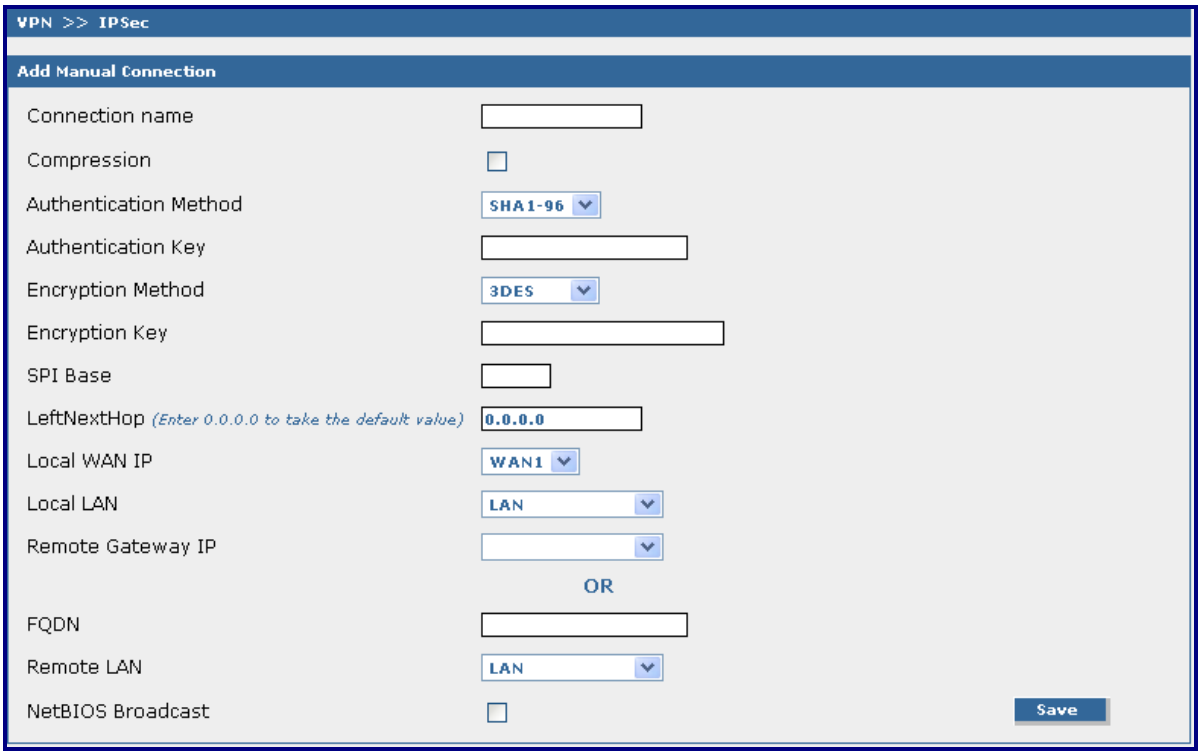
Local ID
Enter a string identifier for the local security gateway.

Remote ID
Enter a string identifier for the remote security gateway.

NetBIOS Broadcast
Check this option to enable broadcasts over the connection. It will allow computers on the network to share Microsoft file and printer sharing information.

Add a Manual Connection

This section enables setting IPSec tunnels through manual connection.



Add Manual Connection

Connection Name

Enter a text name that will identify the connection for you.

Compression

Check the compression checkbox to enable IPCOMP, the compression algorithm.

Authentication Method

Select the authentication algorithms to be used for the respective security services. Options are: MD5-96 and SHA1-96.

Authentication Key

The VPN firewall could use either MD5 or SHA1 for authentication
MD5-96 bit key example: 0x123456789012345678.
SHA1-96 bit key example: 0x123456789012345678

Encryption Method

Select the encryption method. Options include: 3DES, DES, AES-128, AES-192, AES-256, and NULL (no encryption).

Encryption Key

The RouteFinder can use any one of the methods listed above. See the online Help for examples.

SPI Base

The Security Parameter Index identifies a manual connection. The SPI is a unique identifier in the SA (Secure Association – a type of secure connection) that allows the receiving computer to select the SA under which a packet will be processed. The SPI Base is a number needed by the manual keying code. Enter any 3-digit hexadecimal number, which is unique for a security association. It should be in the form 0xhex (0x100 through 0xfff is recommended). If you have more than one manual connection, then the SPI Base must be different for each one.

Left Next Hop
Next Hop is the address of the next device in a routing table's path that moves a packet to it's destination. This setting can be configured or left as a static value: 0.0.0.0. When not configured, the value is set to the Gateway of the Box/Gateway configured on the Interface/Right IP. The selection is based on the Left and Right IP.

Local WAN IP
Select the Interface to initiate the IPSec tunnel (Left Security Gateway).

Local LAN
Select the internal subnet of the local security gateway for which the security services are to be provided. If the RouteFinder acts as a host, this should be configured as **None**. Other options are: Any, LAN, LAN Interface, WAN 1, WAN 1 Interface.

Remote Gateway IP
Select the interface in which the IPSec tunnel ends. In the case of Road Warriors with a Dynamic IP addresses, this should be configured as **ANY**. Other options include: LAN, LAN Interface, WAN 1, WAN 1 Interface, and None.

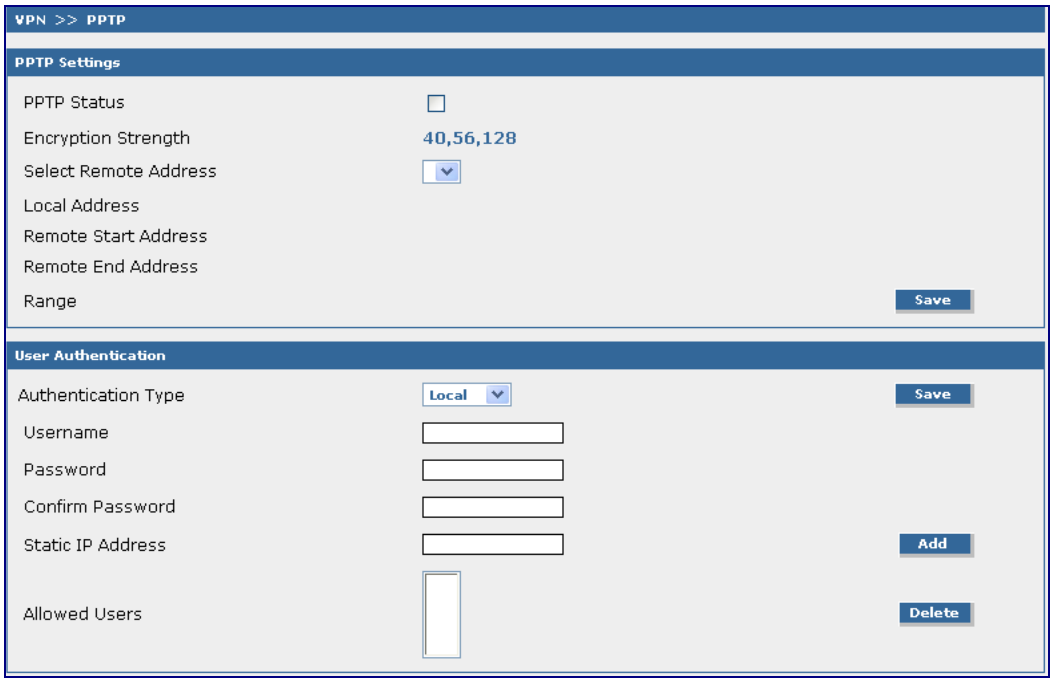
FQDN
FQDN is a DNS resolvable fully qualified domain name with which identity the right peer can be identified. When FQDN is entered, the Remote Gateway IP should be blank.

Remote LAN
This is the internal subnet of the remote security gateway for which the security services are to be provided. If the remote end is a host, this should be configured as **None**.

NetBIOS Broadcast
Check this option to enable broadcasts over the connection. It will allow computers on the network to share Microsoft file and printer sharing information.

VPN › PPTP

PPTP (Point-to-Point Tunneling Protocol) is a tunneling protocol meant for tunneling IP packets and non-IP packets through the IP only network (the Internet). PPTP offers connections to PPTP clients so that they can become virtual members of the IP pool owned by the PPTP server. In effect, these clients become virtual members of the local subnet regardless of their real IP address.



PPTP Settings

PPTP Status

Check this PPTP Status box to enable PPTP.

Encryption Strength

Select the encryption strength for the remote access connection. Options are 40 bit, 56 bit, or 128 bit.

Select Remote Address

The local IP address for the PPTP link and the range of remote IP addresses can be selected with this option. The network has to be defined in the Network section. The Local Address, Remote Start Address, Remote End Address, and Range are displayed below as configured from the network. Check *Select Remote Address*; click the **Save** button. Then the following information displays:

Local Address – Displays the private LAN IP Address, which is NOT modifiable.

Remote Start Address – Displays the first IP address in a range of IP addresses to be assigned to remote clients.

Remote End Address – Displays the last IP address in a range of IP addresses to be assigned to remote clients.

Range – Displays the range of IP addresses that can be assigned to remote clients.

User Authentication

Authentication Type

Select the desired user **Authentication Type** and click the **Save** button:

- **Local –** Authentication type used when local users have individual access rights.
- **RADIUS –** Authentication type used when access rights comes from a central server for user authentication.

Local or RADIUS

Local Authentication Input

User Name – Enter the user's name in lowercase.

Password – Enter the user's password (in lowercase).

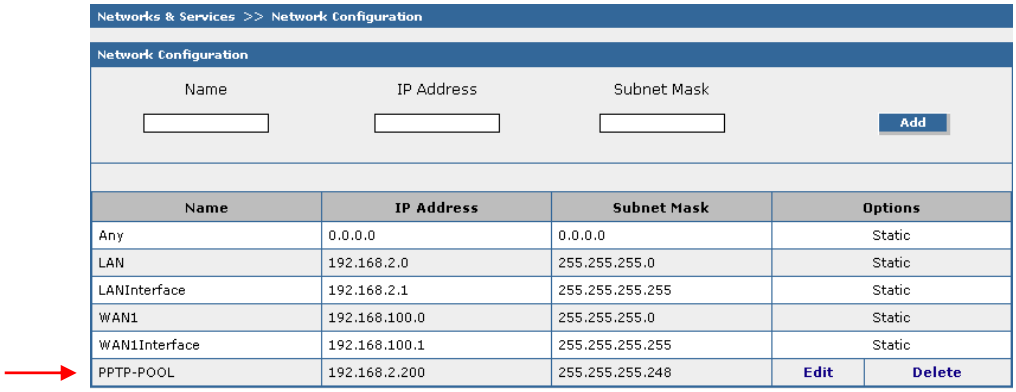
Confirm Password – Retype the password to confirm it.

Static IP Address – Enter the specific Static IP Address from the range so that the server will issue it to the client when it is connected.

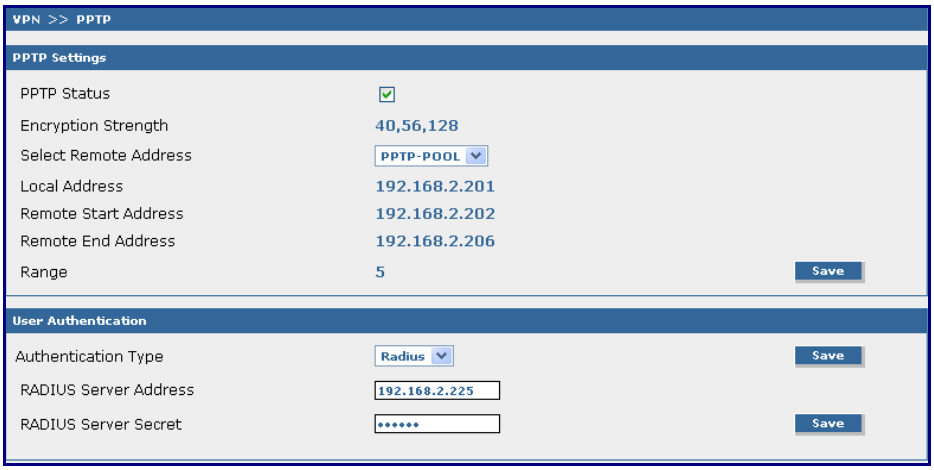
Allowed Users – The names of the users entered above display in this text box. If you wish to delete a name, click the *Delete* button.

RADIUS Authentication Input

Prerequisite Step – In order to select RADIUS as the authentication type, you must set up a PPTP network by going to the ***Network & Services > Network Configuration*** screen and enter a Network Name, IP Address and Subnet Mask as in this example:



Return to the VPN > PPTP Screen – Select PPTP-POOL as the Remote Address:



Authentication Type – Select RADIUS.

RADIUS Server Address – Enter the RADIUS server IP Address.

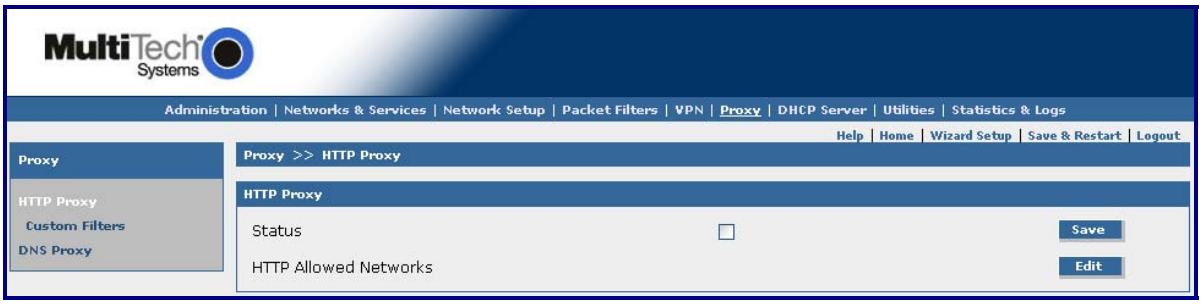
RADIUS Server Secret – Enter the secret which is configured in the RADIUS server.

Proxy

While the packet filter filters the data traffic on a network level, the use of a **Proxy** (also called an Application Gateway) increases the security of the RouteFinder on the application level, as there is no direct connection between client and server.

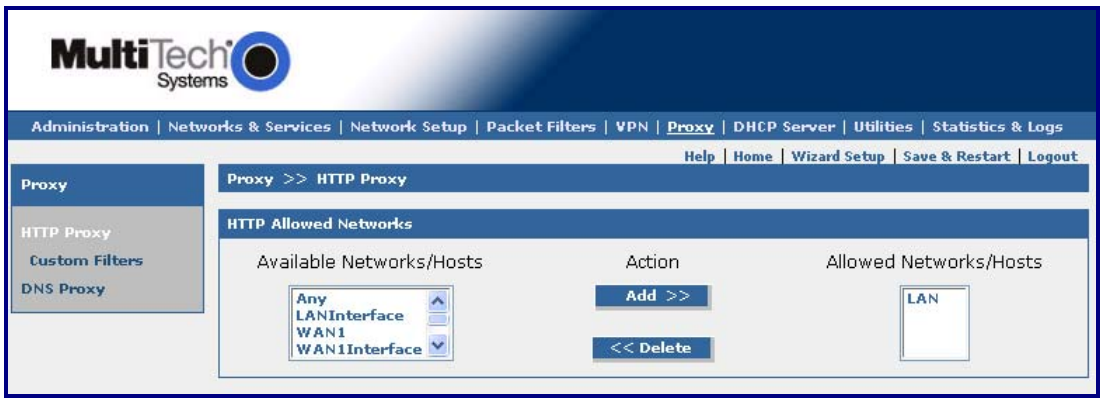
Proxy › HTTP Proxy

The HTTP Proxy is a module built into the RouteFinder to redirect HTTP requests from the clients in the LAN to the Internet.


MultiTech Systems
Administration | Networks & Services | Network Setup | Packet Filters | VPN | Proxy | DHCP Server | Utilities | Statistics & Logs
Help | Home | Wizard Setup | Save & Restart | Logout
Proxy
HTTP Proxy
Custom Filters
DNS Proxy
Proxy >> HTTP Proxy
HTTP Proxy
Status
Save
HTTP Allowed Networks
Edit

HTTP Status

To enable HTTP, check the *Status* box and click **Save**. When you click **Edit**, the HTTP Allowed Networks part of the screen displays.



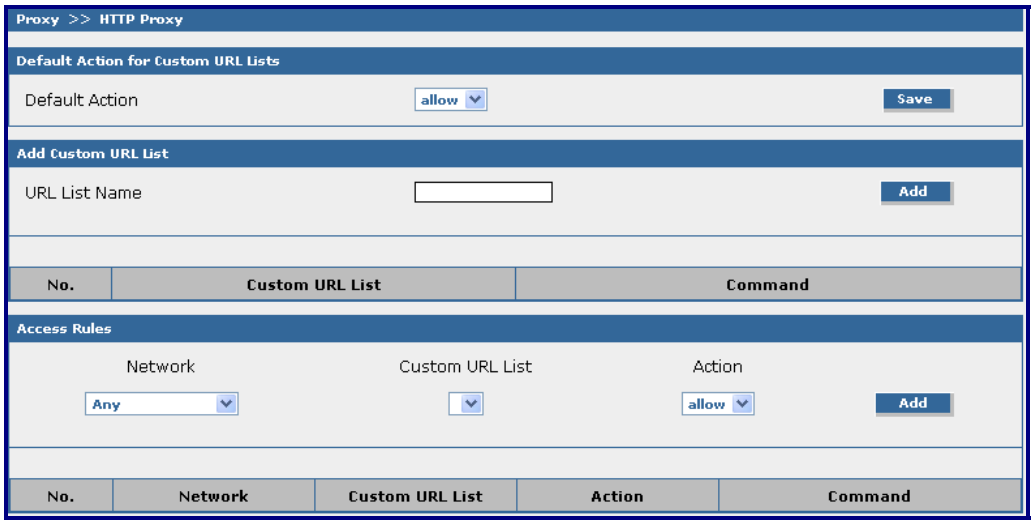
HTTP Allowed Networks

Available Networks/Hosts

This defines the allowed network/host for access to the HTTP. To select the networks you want to be available for the HTTP proxy, highlight the network name and click the **Add** button.

Proxy › Custom Filters

The custom URL list allows URLs to be filtered or forwarded by the RouteFinder. Custom URL lists are configured here. Sets of URLs to be forwarded/filtered for a particular network/host can also be configured.



Default Action for Custom URL Lists

Default Action

The default action can be set to either *Allow* or *Deny*. Click the **Save** button to set the default action.

Add Custom URL List

A custom URL list has to be defined before a rule is added. The name for the URL list is entered here. Click the **Add** button to save the name.

To enter URLs into the list, click the Edit button

Add Custom URL List

URL List Name

A Custom URL List has to be named before defining a rule. Enter a name for the URL to include in the list here. Click the **Add** button to save the name. The name will be added to the Custom URL List on this screen. Once the name is listed, you can edit it and delete it.

Access Rules

The **Access Rules** function enables you to define custom rules for the URL lists. With these custom rules, networks/hosts can be allowed or denied access to certain URLs.

An access rule consists of three parts:

1. Network or Host
2. URL List
3. Allow or Deny Access

Example

List Name: URL List named **list1** contains the URL www.google.com
Networks: There are two networks **net1** and **net2** defined.
Rules: Two rules have been configured:

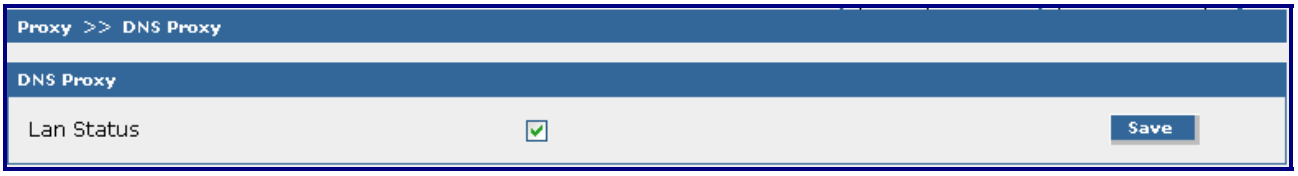
net1 – list1 – allow
and
net2 – list1 – deny

What Does This Mean:

- Users from **net1** trying to access google.com will be allowed to access the site.
- Users from **net2** trying to access google.com will not be allowed to access the site.
- Users from any other network will be allowed/denied access based on default action.

Proxy › DNS Proxy

DNS Proxy is a module used to redirect DNS requests to name servers. This module supports a caching-only name server which will store the DNS entries for a specified item. So, when there is a query next time, the values will be taken from the cache and the response will be sent from the module itself. This will shorten the waiting time significantly, especially if it is a slow connection.



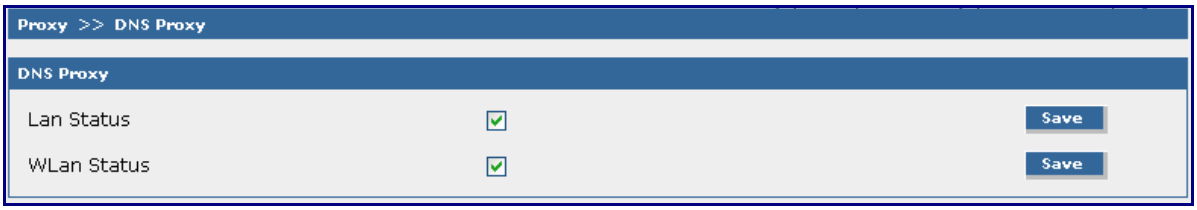
DNS Proxy

LAN Status

Click the *Status* box to enable the DNS proxy. Click the **Save** button.
If enabled, the DNS Proxy will be listening on the LAN interface.

WLAN Status

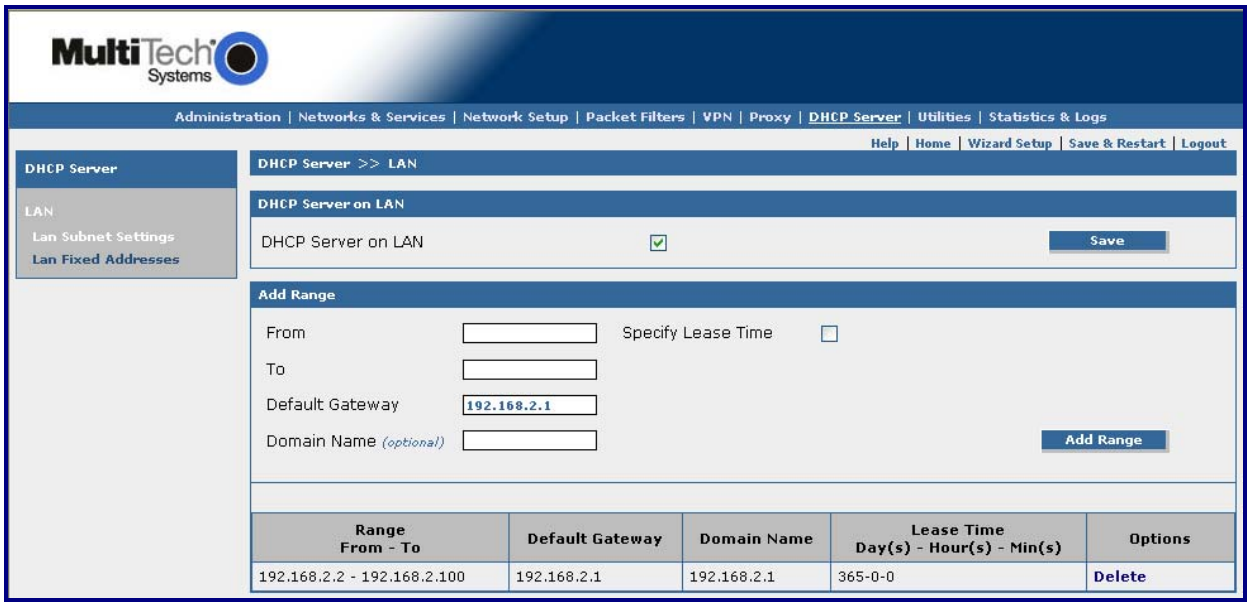
With AP build, you can select *WLAN Status* to enable DNS proxy. Click the **Save** button.



DHCP Server

DHCP Server › LAN Subnet Settings

DHCP (Dynamic Host Configuration Protocol) is a protocol that allows individual devices on an IP network to get their own network configuration information (IP address, subnet mask, broadcast address, etc.) from a DHCP server. The overall purpose of the DHCP is to make it easier to administer a large network.



DHCP Server on LAN

DHCP Server on LAN

The DHCP Server is enabled by default. If you would like to disable it, uncheck the *DHCP Server on LAN* checkbox. If you change the check mark, click the **Save** button to activate the change.

Add Range

From

To add a range of IP addresses, enter the beginning address of the range in this *From* field.

To

Enter the last IP address of the range in this *To* field.

Specify Lease Time

By default, infinite lease is assigned to the configured subnet. However, this is NOT mandatory and can be configured. If enabled by checking the box, the following lease time parameters can be configured:
Day, Hours, Mins

Default Gateway

Enter the RouteFinder's IP Address. This address will have to be assigned to the DHCP Client.

Domain Name (optional)

Enter the Domain Name Server's IP Address. This configured DNS IP address is passed on to the DHCP Client. This parameter is optional.

Click Add Range

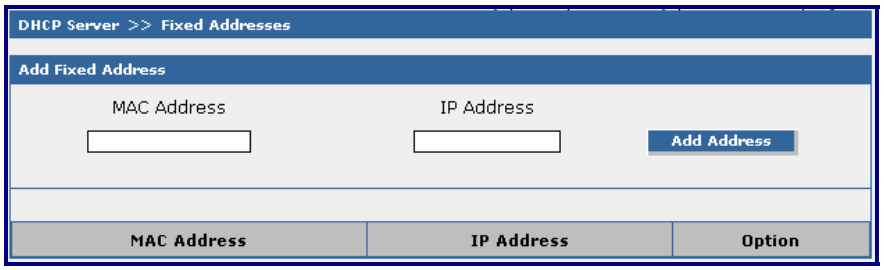
Click the Add Range button when you have finished entering your parameters.

Delete

You can delete a range by selecting it and clicking **Delete**.

DHCP Server › LAN Fixed Addresses

The DHCP server can be made to assign a fixed IP address for a particular system by identifying the MAC address. This binding can be made permanent by configuring it here. The same IP address will not be used for any DHCP client with a different MAC address, even if there is no active DHCP connection with that IP address.



Add Fixed Address

Enter both a MAC address and an IP address.

MAC Address

Enter the MAC address.

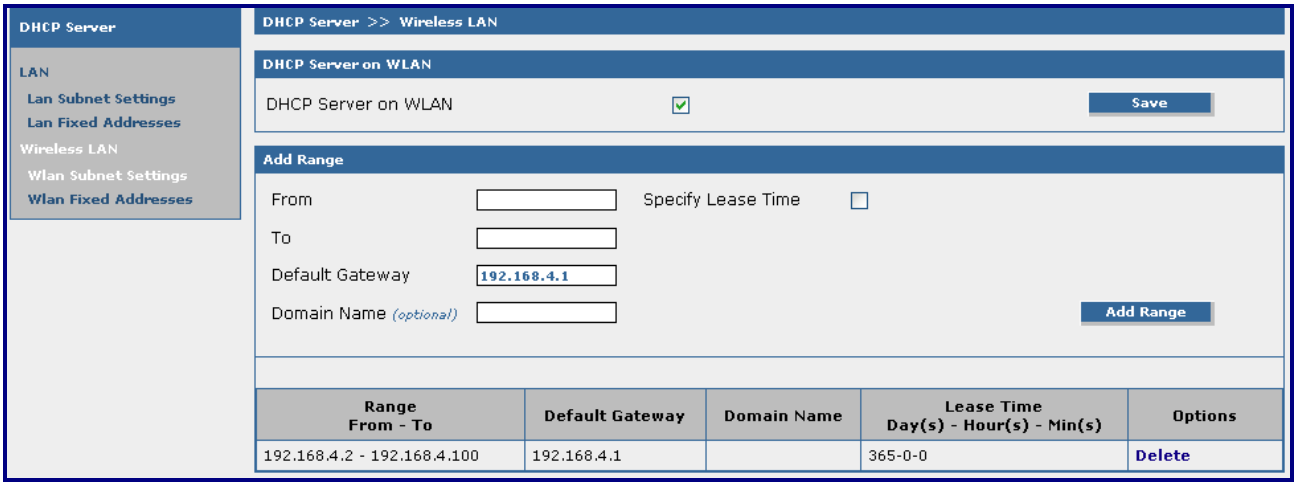
Add Fixed Address

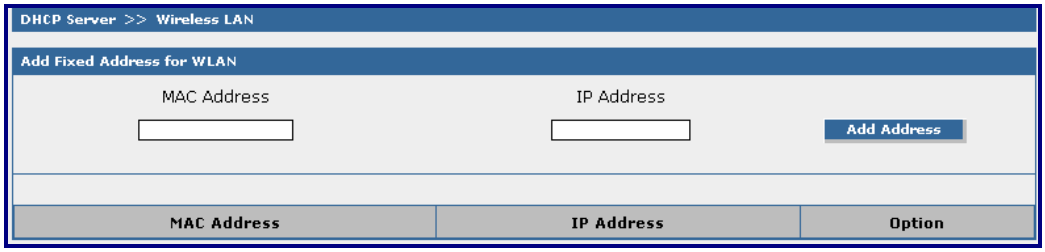
Enter the fixed IP address.

DHCP Server › WLAN Subnet Settings and WLAN Fixed Addresses

This screen becomes available after you have checked the *Independent Subnet* box on the *Network Setup* > *Wireless LAN* screen. On this DHCP screen, you will be able to set up a separate Network subnet address for the wireless LAN. You might want to use this to give a certain workstation access to the Internet and not to the local network or *vice versa.*

Following the same directions for these screens as for the *LAN Subnet Settings* and *LAN Fixed Addresses*.

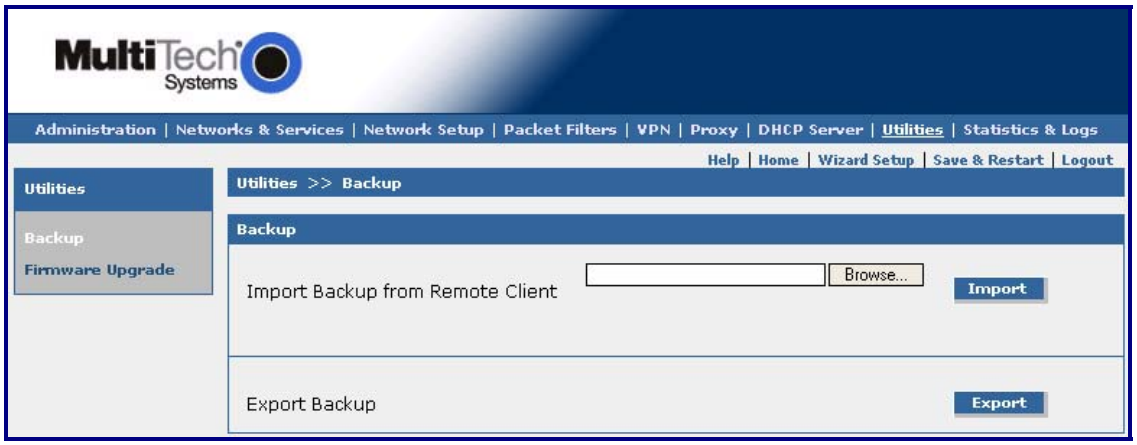




Utilities

Utilities › Backup

The Backup function lets you save the RouteFinder settings on a local hard disk or exported to a remote client. With a backup file, you can set a recently installed RouteFinder to the identical configuration level as an existing RouteFinder. This is also useful in case there is a problem with your new settings.


MultiTech Systems
Administration | Networks & Services | Network Setup | Packet Filters | VPN | Proxy | DHCP Server | Utilities | Statistics & Logs
Help | Home | Wizard Setup | Save & Restart | Logout
Utilities
Backup
Firmware Upgrade
Utilities >> Backup
Backup
Import Backup from Remote Client
Browse...
Import
Export Backup
Export

Backup

Import Backup from Remote Client

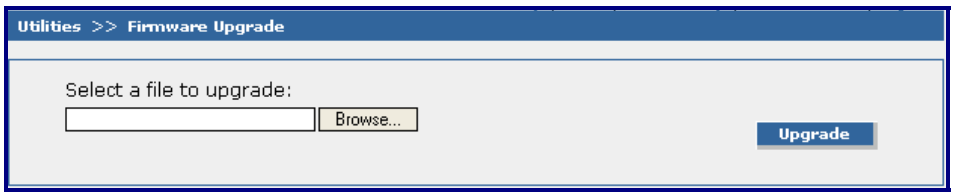
Use this section of the screen to import a saved configured. Click the **Browse** button to locate the file. Then click the **Impor**t button to restore the RouteFinder's configuration from this backup file. The configuration file is downloaded to the RouteFinder and the saved configuration restored.

Export Backup

Use this section of the screen to store the RouteFinder's configuration. Click the **Export** button to save the configuration file.

Utilities › Firmware Upgrade

The firmware on the RouteFinder can be upgraded to the latest version using this feature. All Multi-Tech firmware upgrades are posted on the Multi-Tech Web site from which they can be downloaded.



Select a File to Upgrade

Click the browse button to locate the latest firmware version.

Click the **Upgrade** button to start the download.

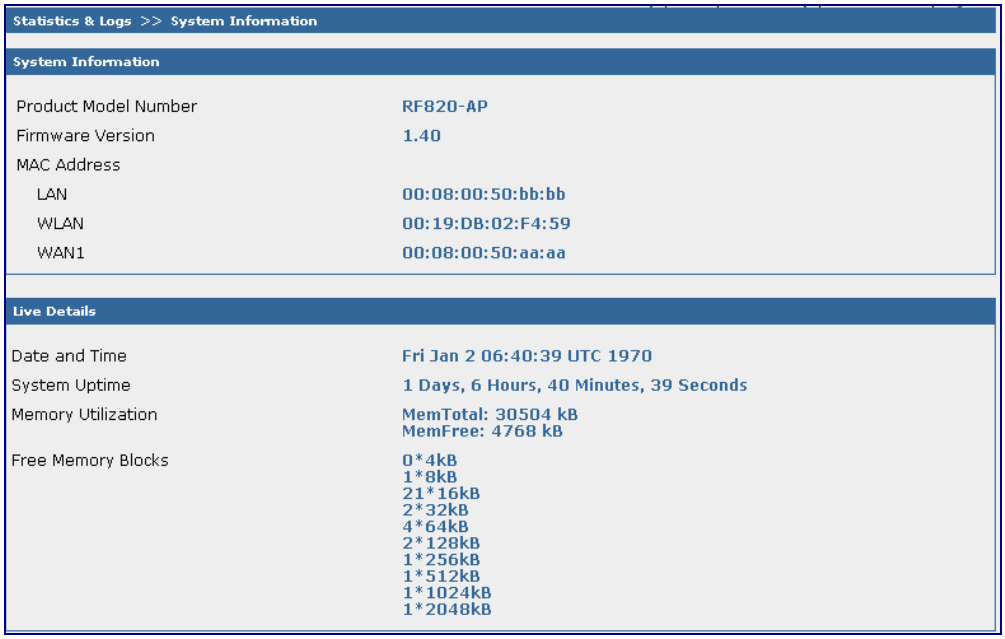
Note: The RouteFinder will reboot automatically after the firmware upgrade.

Statistics & Logs

Statistics & Logs › System Information

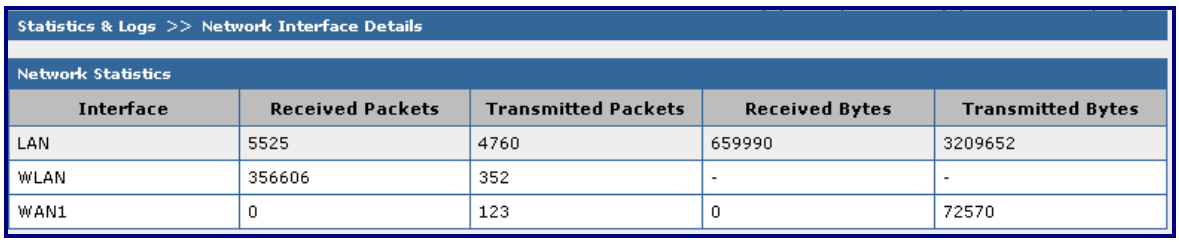
The System Information screen provides the following information:

1. System Information
   - Product Modem Number
   - Firmware Version
   - MAC Address
2. Live Details
   - Date and Time
   - System Uptime
   - Memory Utilization
   - Free Memory Blocks



Statistics & Logs › Network Interface Details

The screen provides information on the network traffic on all the interfaces.



Interface	Received Packets	Transmitted Packets	Received Bytes	Transmitted Bytes
LAN	5525	4760	659990	3209652
WLAN	356606	352	-	-
WAN1	0	123	0	72570

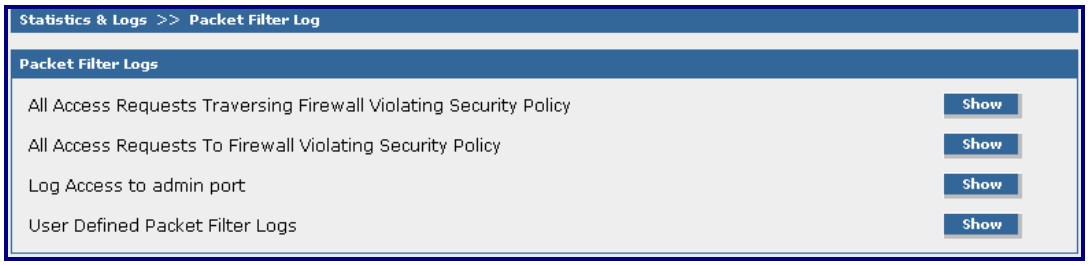
Statistics & Logs › Packet Filter Log

The screen displays the following Packet Filter Logs:

All Access Requests Traversing Firewall Violating Security Policy
All access requests from the private (LAN) and public (WAN) network clients to traverse the RouteFinder that violate the configured security policy.

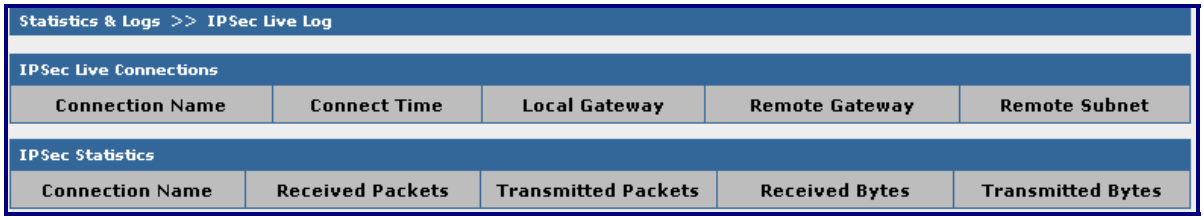
All Access Requests to Firewall Violating Security Policy
All access requests from the private (LAN) and public (WAN) network clients to send traffic to the RouteFinder itself that violate the configured security policy.

Log Access to Administrative Access Port
All access requests from the private (LAN) and public (WAN) network clients to send traffic to the RouteFinder on the administrative access port.


Statistics & Logs >> Packet Filter Log
Packet Filter Logs
All Access Requests Traversing Firewall Violating Security Policy
Show
All Access Requests To Firewall Violating Security Policy
Show
Log Access to admin port
Show
User Defined Packet Filter Logs
Show

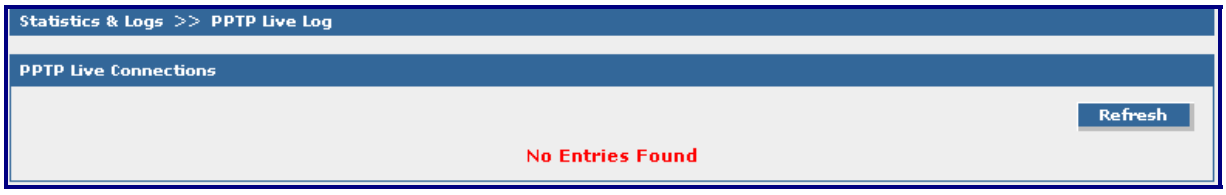
Statistics & Logs › IPSec Live Log

IPSec Live Log gives information on connections that are active.
IPSec Statistics gives statistics of transmitted and received packets/bytes.



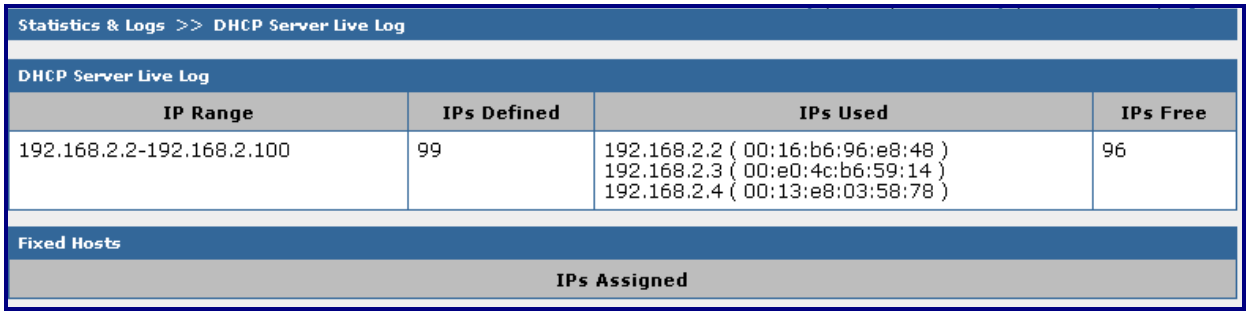
Statistics & Logs › PPTP Live Log

The PPTP Live Log gives information about users who are logged in into the PPTP server at any given point in time. It also gives the Connect Time (data and time), Interface Name (the link on which the user is connected), User Name, Local IP Address and Remote IP Address assigned, Bytes Received, and Bytes Sent.



Statistics & Logs › DHCP Server Live Log

The DHCP Server Live Log gives information for a sub network:



Statistics & Logs › PPP Cellular/Analog Log

The PPP Cellular/Analog Log gives information about the modem connection:

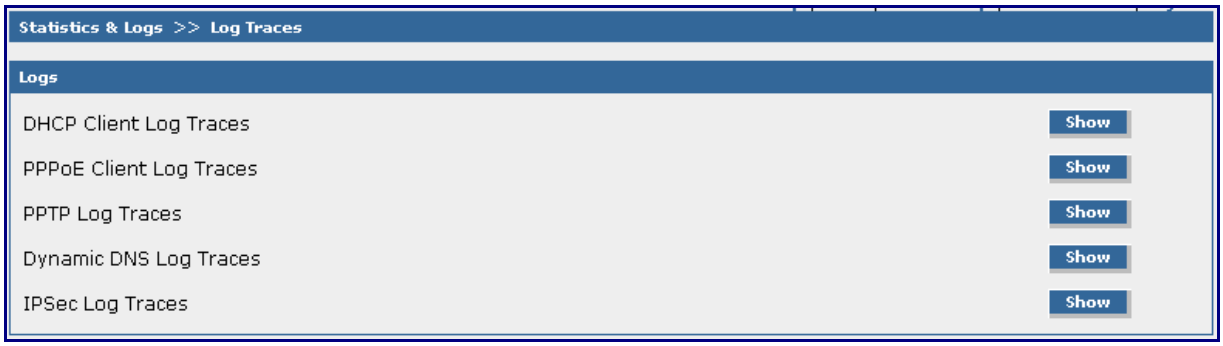
Statistics & Logs >> PPP Cellular/Analog Log
PPP Cellular/Analog Log
Refresh
Jan 1 00:00:31 chat[657]: rcvd ()
Jan 1 00:00:28 chat[657]: sent (at+csq)

Statistics & Logs › WLAN Client Live Log

The WLAN Client Live Log lists current WLAN connections.

Statistics & Logs › Log Traces

Log Traces provides information about the following connections.



Logs

DHCP Client Log Traces

Click the **Show** button to view connection events between the DHCP Client and the DHCP Server.

PPPoE Client Log Traces

Click the **Show** button to view connection events between the PPPoE Client and the DHCP Server.

PPTP Log Traces

Click the **Show** button to view PPTP connection events.

Dynamic DNS Log Traces

Click the **Show** button to view DDNS connection events.

IPSec Log Traces

Click the **Show** button to view IPSec connection events and key negotiations.

Chapter 6 – Troubleshooting

This chapter provides a list of common problems encountered while installing, configuring, or administering the RouteFinder. In the event you are unable to resolve your problem, see the copyright page for information about contacting our Technical Support representatives.

RouteFinder Troubleshooting

Other computers can connect to the network device, but my computer can't.

- Whenever I click on Internet Explorer or Netscape, I see the Windows Dial-up utility popping up on my screen asking my phone number and password to dial-up my ISP. To correct this, remove the TCP/IP dial-up adapter from all computers that will be using your RouteFinder to access the Internet. TCP/IP dial-up adapter is not needed to use the RouteFinder to connect to the Internet.
  1. To remove the Dial-up Adapter, click **Start | Settings | Control Panel**.
  2. Double-click the **Network** icon.
  3. Click the **Dial-up Adapter** and click **Remove**. Restart the computer and try again.
- Ensure your PC has a correct IP address. From a DOS window in Windows 95/98, type **WINIPCFG** or from other Windows operating systems, type **IPCONFIG**. If the address field is listed as 0.0.0.0, the computer does not have an IP address. Ensure the automatic DHCP configuration has been correctly set up for this computer or enter a statically assigned IP address.
- Ensure that the Web browser is properly configured to connect to the Internet via the LAN.

The RouteFinder is connected, but my workstation has problems accessing the Internet.

- Ensure the workstation has TCP/IP properly configured.
- Attempt to ping the IP address of the RouteFinder.
- Use Web browser interface to see if the WAN Ethernet port has successfully acquired a dynamic IP address from the ISP, or if the static IP address is valid.
- Use WINIPCFG (Windows 95/98) or IPCONFIG (Windows NT/ 2000) to check to see if the computer's IP settings are correct.
- Ensure the DNS settings are correct.
- Ensure the Gateway IP address is the device's LAN Ethernet IP address (Server IP address).
- Ensure the IP address netmask is correct.

It appears that the RouteFinder cannot communicate with my modem.

- Check your initialization string. If you are using a GSM/EDGE cellular connection and your cellular initialization string was not listed as a choice in the PPP Setup, go to the *Network Setup > PPP Cellular Backup* screen.

My RouteFinder dials-up a connection but it can't seem to communicate with the ISP.

- Verify that your baud rate is not set too high. The maximum baud rate that your modem or cellular module claims it can achieve may not be attainable due to poor line or connection quality. Use the RouteFinder Web browser management interface to set the baud rate to a lower rate and retry the connection.
- If your connection still doesn't work, contact your ISP.

Sometimes when I try to use the Internet or get my mail, the application can't connect to the Internet immediately.

- The most common reason for this is not due to a problem or error. If you are the first person to make a connection to the Internet through the RouteFinder, there will be a delay when the Dial-On-Demand function automatically makes the connection and logs on to your ISP. Subsequent users will be able to use the connection you've established without a delay.
- If the scenario described above does not fit your situation, use RouteFinder Web browser management interface to view all events that are taking place between the modem and your ISP as you attempt to make a connection (e.g., a busy signal). Go to the *Statistics & Logs* > *PPP Cellular Log* screen.

After installing my RouteFinder, my modem connection seems to be slower.

- The RouteFinder device should have no effect on the modem speed. However, if more than one client is using the same modem through the RouteFinder, the throughput will be reduced.
- Run RouteFinder Web browser management interface to view the number of concurrent client connections to your ISP.

While the cellular dial-up connection is in use, my RouteFinder keeps dialing a connection to the Internet, but no one is using the Internet.

- The RouteFinder will only dial the connection if there is a request from one of the computers on the LAN for an IP address on the Internet. Keep in mind that certain applications can be configured to request information from the Internet. For example, Microsoft Outlook can be set up to "check for new mail every x minutes". If this feature is enabled, Outlook will send a request for your Internet POP3 server which will cause your RouteFinder to dial-up your ISP. To determine which computer on your network is processing a request for an Internet connection, use the RouteFinder Web browser management interface. The event messages will provide information about which computer is causing the RouteFinder to dial and which service (port #) the computer is requesting.

The *Please set the Device IP* screen displays while configuring the RouteFinder.

- Windows detects that the RouteFinder's LAN Ethernet IP address is not in the same subnet as the PC's. Ensure your PC has a correct IP address. From a DOS window in Windows 95/98, type **WINIPCFG** or from other Windows operating systems, type **IPCONFIG**. If the address field is listed as 0.0.0.0, the computer does not have an IP address. Ensure the automatic DHCP configuration has been correctly set up for this computer or enter a statically assigned IP address.

A message appears indicating the input IP address is either not valid on your network or is in conflict with another IP address.

- The system has detected the IP address of the RouteFinder you are configuring is in conflict with another device. Power off the conflicting device and configure the RouteFinder with a different Ethernet LAN IP address.

CDMA Troubleshooting

I have the N1 model and I can't get it activated on my carrier's network.

- You will need to configure the MDN, MIN, and maybe more settings such as the primary and secondary channels, and the Home SID and UID.
- The commands are: +WMDN (MDN), +WIMI (MIN), +WPCC (Primary channel), +WSCC (Secondary channel), +WSID (SID and UID), and +WCMT=1 (to store changes)
- You may need more settings set, so you may need to use the WPST provisioning tool application.

(Note: N1 models are usually used for developmental purposes, so the customer will usually be working with a carrier to get this activated on their network. It is always best for the customer to be working with the carrier when they are activating a N1 model.)

I activated my modem but I can't do anything with it. When I try to dial out, I get a NO CARRIER response.

- If you are receiving a NO CARRIER response, send 'AT+CEER' to check the reason for no carrier, then check the number in the Reference Guide.
- Make sure the modem is registered and getting good signal: AT+CREG and AT+CSQ.
- Make sure the modem is activated and provisioned correctly.

EDGE Troubleshooting

I can't make any outgoing calls and I have a solid LS light. I just receive a NO CARRIER response.

- Make sure the antenna is connected and SIM is inserted correctly.
- Check signal and registration: 'AT+CSQ' (10-31 is good), 'AT+CREG?' (0,1 is registered & 0,5 is roaming).
- Check NO CARRIER reason with 'AT+CEER'. Look up error code in Reference Guide.

Chapter 7 – Frequently Asked Questions

RouteFinder FAQs

Where is the RouteFinder installed on the network?

In a typical environment, the RouteFinder is installed between the Cable/DSL Modem and the LAN. The wireless RouteFinder has the modem as part of the device. Plug the WAN of the RouteFinder into the Cable/DSL modem Ethernet port.

Does the RouteFinder support IPX or AppleTalk?

No. TCP/IP is the only protocol standard for the Internet and has become the global standard for communications. IPX, a NetWare communications protocol used only to route messages from one node to another, and AppleTalk, a communications protocol used on Apple and Macintosh networks, can be used from LAN to LAN connections, but those protocols cannot connect from WAN to LAN.

Does the WAN connection of the RouteFinder support 100Mbps Ethernet?

Yes, the RouteFinder's current hardware design supports 100Mb Ethernet on its WAN port. It also supports 100Mbps over in the auto-sensing Fast Ethernet 10/100 switch on the LAN side of the RouteFinder.

What Is Network Address Translation and How Is It Used?

Network Address Translation (NAT) translates multiple IP addresses on the private LAN to one public address that is sent out to the Internet. This adds a level of security since the address of a PC connected to the private LAN is never transmitted on the Internet. Furthermore, NAT allows the RouteFinder to be used with low cost Internet accounts where only one TCP/IP address is provided by the ISP. The user may have many private addresses behind this single address provided by the ISP.

Does the RouteFinder support any operating system other than Windows?

Yes, but Multi-Tech does not, at this time, provide technical support for setup, configuration or troubleshooting of any non-Windows operating systems.

Does the RouteFinder pass PPTP packets or actively route PPTP sessions?

The RouteFinder lets PPTP packets pass through. It supports both pass-through and server.

What is the maximum number of users supported by the RouteFinder?

The RouteFinder supports up to 253 users.

Is the RouteFinder cross-platform compatible?

Any platform that supports Ethernet & TCP/IP is compatible with the RouteFinder.

Will the RouteFinder function in a Mac environment?

Yes, as long as you have a browser to configure the router and it's running IP protocols.

Will the RouteFinder allow you to use your own public IPs and Domain, or do you have to use the IPs provided by the RouteFinder?

The RouteFinder mode allows for customization of your public IPs and Domain.

Can multiple gamers on the LAN get on one game server and play simultaneously with just one public IP address?

It depends on which network game or what kind of game server it is. For example, Unreal Games support multi-login with one public IP.

Does the RouteFinder replace a modem? That is, is there a cable or DSL modem in the router?

No. The RouteFinder must work in conjunction with a cable or DSL modem.

Which modems are compatible with the router?

The RouteFinder is compatible with any cable modem or DSL modem that supports Ethernet.

How do I access the RouteFinder's setup pages with a Mac?

The RouteFinder's setup pages are accessible to the Mac through a browser. Use the default address 192.168.2.1.

Can I choose whether to use UDP or TCP on the RouteFinder's ports?

No, the RouteFinder does not have this feature. UDP and TCP are both automatically activated at the same time when the RouteFinder's service ports are specified to be opened.

Does Multi-Tech provide syslog support?

Yes.

How can I check whether I have static or DHCP (dynamic) IP addresses?

Consult your ISP to confirm this data.

Does the RouteFinder support PPP over Ethernet (PPPoE)?

Yes, the RouteFinder does support PPPoE.

Why does the RouteFinder not obtain the IP address assigned by my ISP?

- Make sure that your cable or DSL modem is connected properly.
- Try resetting your cable or DSL modem by powering the modem off and on.
- If you are using dynamic IP addressing, make sure that your cable or DSL modem is DHCP- capable.
- Some ISPs require a MAC address to be registered with them.

If all else fails in the installation, what can I do?

- Reset your cable modem or DSL modem by powering the unit off and on.
- Obtain the latest release of firmware for the RouteFinder at www.multitech.com.
- Reset the RouteFinder's factory default by holding down the reset button until the lights start blinking.
- Flash the firmware again to the RouteFinder to ensure that it was successfully written to the unit.

How will I be notified of new RouteFinder firmware upgrades?

All Multi-Tech firmware upgrades are posted on the Multi-Tech Web site at www.multitech.com, where they can be downloaded for free.
Your RouteFinder does NOT need the latest firmware upgrade if your Internet connection is already successful, as firmware upgrades will not increase your connection speed or enhance your RouteFinder's performance.

Does the RouteFinder support IPSec?

The RouteFinder supports IPSec endpoint/gateway.

What type of firewall is the router equipped with?

The RouteFinder uses NAT.

I am not able to get my e-mails or my ISP Web page (e.g., http://www.isp.com/). What can I do?

Contact the ISP to get the full URL, or you can do the following:

1. Connect one of the computers directly to the cable modem or DSL modem.
2. Open a command prompt and ping the ISP web server or mail server name given. For example, at the command prompt, type in ping www and press Enter. You should be able to get an IP address when it responds.
3. After you get the IP address, enter the IP address on the mail server option.

EDGE FAQs

What are the different carriers APNs?

- Each carrier will most likely have a different APN from another. The best way to know which APN you have is to contact the provider.
- Here are some common APNs that we know of:
  AT&T – "PROXY", "INTERNET", "PUBLIC"
  T-Mobile – "INTERNET2.VOICESTREAM.COM", "INTERNET3.VOICESTREAM.COM"
  Cingular – "ISP.CINGULAR" , username = "ispda@cingulargprs.com" , password = "CINGULAR1"
  Rogers AT&T – "INTERNET.COM"
  Telstra AU – "TELSTRA.INTERNET"

Which module is used?

- Siemens GSM/GPRS/EDGE quad-band module: MC75

CDMA FAQs

What are the current models and firmware versions?

- N1 – 213G: Generic
- N2 – 205S: Sprint
- N3 – 213V: Verizon
- N4 – 213R: RUIM
- N5 – 213G: New Zealand Telecom
- N6 – 210G, Bell South Ecuador
- N7 – 212A: Telstra Australia
- N8 – 210G: Bell South Colombia
- N9 – 213G: Generic w/Akey=0
- N10 – Bell South Peru
- N11 – 215I: RUIM Indonesia
- N12 – 212B: Bell Mobility Canada
- N13 – Reserved
- N14 – 215L: Alltel
- N15 – xxxx: Telus Canada
- N16 – xxxx: AerisUS

(NOTE: Some of the above models may not be officially released.)

Who are the carriers?

- Two major carriers in the US are Sprint and Verizon.

Does this modem support High-Speed Circuit-Switched Data (HSCSD)?

- No, our CDMA modems do not support HSCSD.

Appendix A – Table of Commonly Supported Subnet Addresses

This table lists commonly supported Subnets organized by Address.

	Network Number	Hosts Available	Broadcast Address
255.255.255.128	N.N.N.0	N.N.N.1-126	N.N.N.127
/25	N.N.N.128	N.N.N.129-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.192	N.N.N.0	N.N.N.1-62	N.N.N.63
/26	N.N.N.64	N.N.N.65-126	N.N.N.127
	N.N.N.128	N.N.N.129-190	N.N.N.191
	N.N.N.192	N.N.N.193-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.224	N.N.N.0	N.N.N.1-30	N.N.N.31
/27	N.N.N.32	N.N.N.33-62	N.N.N.63
	N.N.N.64	N.N.N.65-94	N.N.N.95
	N.N.N.96	N.N.N.97-126	N.N.N.127
	N.N.N.128	N.N.N.129-158	N.N.N.159
	N.N.N.160	N.N.N.161-190	N.N.N.191
	N.N.N.192	N.N.N.193-222	N.N.N.223
	N.N.N.224	N.N.N.225-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.240	N.N.N.0	N.N.N.1-14	N.N.N.15
/28	N.N.N.16	N.N.N.17-30	N.N.N.31
	N.N.N.32	N.N.N.33-46	N.N.N.47
	N.N.N.48	N.N.N.49-62	N.N.N.63
	N.N.N.64	N.N.N.65-78	N.N.N.79
	N.N.N.80	N.N.N.81-94	N.N.N.95
	N.N.N.96	N.N.N.97-110	N.N.N.111
	N.N.N.112	N.N.N.113-126	N.N.N.127
	N.N.N.128	N.N.N.129-142	N.N.N.143
	N.N.N.144	N.N.N.145-158	N.N.N.159
	N.N.N.160	N.N.N.161-174	N.N.N.175
	N.N.N.176	N.N.N.177-190	N.N.N.191
	N.N.N.192	N.N.N.193-206	N.N.N.207
	N.N.N.208	N.N.N.209-222	N.N.N.223
	N.N.N.224	N.N.N.225-238	N.N.N.239
	N.N.N.240	N.N.N.241-254	N.N.N.255

	Network Number	Hosts Available	Broadcast Address
255.255.255.248	N.N.N.0	N.N.N.1-6	N.N.N.7
/29	N.N.N.8	N.N.N.9-14	N.N.N.15
	N.N.N.16	N.N.N.17-22	N.N.N.23
	N.N.N.24	N.N.N.25-30	N.N.N.31
	N.N.N.32	N.N.N.33-38	N.N.N.39
	N.N.N.40	N.N.N.41-46	N.N.N.47
	N.N.N.48	N.N.N.49-54	N.N.N.55
	N.N.N.56	N.N.N.57-62	N.N.N.63
	N.N.N.64	N.N.N.65-70	N.N.N.71
	N.N.N.72	N.N.N.73-78	N.N.N.79
	N.N.N.80	N.N.N.81-86	N.N.N.87
	N.N.N.88	N.N.N.89-94	N.N.N.95
	N.N.N.96	N.N.N.97-102	N.N.N.103
	N.N.N.104	N.N.N.105-110	N.N.N.111
	N.N.N.112	N.N.N.113-118	N.N.N.119
	N.N.N.120	N.N.N.121-126	N.N.N.127
	N.N.N.128	N.N.N.129-134	N.N.N.135
	N.N.N.136	N.N.N.137-142	N.N.N.143
	N.N.N.144	N.N.N.145-150	N.N.N.151
	N.N.N.152	N.N.N.153-158	N.N.N.159
	N.N.N.160	N.N.N.161-166	N.N.N.167
	N.N.N.168	N.N.N.169-174	N.N.N.175

	N.N.N.176	N.N.N.177-182	N.N.N.183
	N.N.N.184	N.N.N.185-190	N.N.N.191
	N.N.N.192	N.N.N.193-198	N.N.N.199
	N.N.N.200	N.N.N.201-206	N.N.N.207
	N.N.N.208	N.N.N.209-214	N.N.N.215
	N.N.N.216	N.N.N.217-222	N.N.N.223
	N.N.N.224	N.N.N.225-230	N.N.N.231
	N.N.N.232	N.N.N.233-238	N.N.N.239
	N.N.N.240	N.N.N.241-246	N.N.N.247
	N.N.N.248	N.N.N.249-254	N.N.N.255
	Network Number	**Hosts Available**	**Broadcast Address**
255.255.255.252	N.N.N.0	N.N.N.1-2	N.N.N.3
/30	N.N.N.4	N.N.N.5-6	N.N.N.7
	N.N.N.8	N.N.N.9-10	N.N.N.11
	N.N.N.12	N.N.N.13-14	N.N.N.15
	N.N.N.16	N.N.N.17-18	N.N.N.19
	N.N.N.20	N.N.N.21-22	N.N.N.23
	N.N.N.24	N.N.N.25-26	N.N.N.27
	N.N.N.28	N.N.N.29-30	N.N.N.31
	N.N.N.32	N.N.N.33-34	N.N.N.35
	N.N.N.36	N.N.N.37-38	N.N.N.39
	N.N.N.40	N.N.N.41-42	N.N.N.43
	N.N.N.44	N.N.N.45-46	N.N.N.47
	N.N.N.48	N.N.N.49-50	N.N.N.51
	N.N.N.52	N.N.N.53-54	N.N.N.55
	N.N.N.56	N.N.N.57-58	N.N.N.59
	N.N.N.60	N.N.N.61-62	N.N.N.63
	N.N.N.64	N.N.N.65-66	N.N.N.67
	N.N.N.68	N.N.N.69-70	N.N.N.71
	N.N.N.72	N.N.N.73-74	N.N.N.75
	N.N.N.76	N.N.N.77-78	N.N.N.79
	N.N.N.80	N.N.N.81-82	N.N.N.83
	N.N.N.84	N.N.N.85-86	N.N.N.87
	N.N.N.88	N.N.N.89-90	N.N.N.91
	N.N.N.92	N.N.N.93-94	N.N.N.95
	N.N.N.96	N.N.N.97-98	N.N.N.99
	N.N.N.100	N.N.N.101-102	N.N.N.103
	N.N.N.104	N.N.N.105-106	N.N.N.107
	N.N.N.108	N.N.N.109-110	N.N.N.111
	N.N.N.112	N.N.N.113-114	N.N.N.115
	N.N.N.116	N.N.N.117-118	N.N.N.119
	N.N.N.120	N.N.N.121-122	N.N.N.123
	N.N.N.124	N.N.N.125-126	N.N.N.127
	N.N.N.128	N.N.N.129-130	N.N.N.131
	N.N.N.132	N.N.N.133-134	N.N.N.135
	N.N.N.136	N.N.N.137-138	N.N.N.139
	N.N.N.140	N.N.N.141-142	N.N.N.143
	N.N.N.144	N.N.N.145-146	N.N.N.147
	N.N.N.148	N.N.N.149-150	N.N.N.151
	N.N.N.152	N.N.N.153-154	N.N.N.155
	N.N.N.156	N.N.N.157-158	N.N.N.159
	N.N.N.160	N.N.N.161-162	N.N.N.163
	N.N.N.164	N.N.N.165-166	N.N.N.167
	N.N.N.168	N.N.N.169-170	N.N.N.171
	N.N.N.172	N.N.N.173-174	N.N.N.175
	N.N.N.176	N.N.N.177-178	N.N.N.179
	N.N.N.180	N.N.N.181-182	N.N.N.183
	N.N.N.184	N.N.N.185-186	N.N.N.187
	N.N.N.188	N.N.N.189-190	N.N.N.191
	N.N.N.192	N.N.N.193-194	N.N.N.195
	N.N.N.196	N.N.N.197-198	N.N.N.199
	N.N.N.200	N.N.N.201-202	N.N.N.203
	N.N.N.204	N.N.N.205-206	N.N.N.207
	N.N.N.208	N.N.N.209-210	N.N.N.211
	N.N.N.212	N.N.N.213-214	N.N.N.215
	N.N.N.216	N.N.N.217-218	N.N.N.219
	N.N.N.220	N.N.N.221-222	N.N.N.223
	N.N.N.224	N.N.N.225-226	N.N.N.227
	N.N.N.228	N.N.N.229-230	N.N.N.231
	N.N.N.232	N.N.N.233-234	N.N.N.235
	N.N.N.236	N.N.N.237-238	N.N.N.239
	N.N.N.240	N.N.N.241-242	N.N.N.243
	N.N.N.244	N.N.N.245-246	N.N.N.247
	N.N.N.248	N.N.N.249-250	N.N.N.251
	N.N.N.252	N.N.N.253-254	N.N.N.255

Appendix B – Antenna for the Wireless RouteFinder

The Access Point Antenna

Your ship kit for the wireless RouteFinder includes a 2.4 GHz 5dBi SWI-Reverse-F Swivel Antenna.

Important Notes:

- The antenna for this product must be a reverse polarity SMA antenna.
- The antenna must be attached in order for the RouteFinder access point to be operational.

Antenna Electrical Characteristics

Frequency:	2400 to 2500 MHZ
Gain:	4.5dBi (nominal)
VSWR:	≤ 2
Polarization:	Linear, Vertical
Maximum Power:	20W
Impedance:	50 Ω
Connector:	RP-SMA Plug Reverse Polarity Meets FCC Part 15.203 Requirements

Mechanical

Testing Condition Note: Non-operating during test.

Endurance

Number of connection/disconnection of the connector: 500 cycles

Number of 360° rotation of the connector: 1000 cycles

Mandatory: Guaranty of functionalities after test

Bending

Number of 90° at the hinge parts and bending on one direction with 1kg force: 1000 cycles

Mandatory: No mechanical damage tolerated. Guaranty of functionalities after test.

Antenna Resistance

Tests are applicable to all parts and both sides.

Traction

Tractions force applied 3 times on plugs during 15 seconds: 5kg

Mandatory: No mechanical damage tolerated. Guaranty of functionalities after test.

Environmental

Storage

Condition: Non-operating during test.

Cold: -40°C during 72h (IEC 68-2-1 standard Ab/Ad test)

Dry Heat: +80°C during 96h (IEC 68-2-2 standard Bb/Bd test)

Humidity: +40°C at 95% R.H. during 4 days (IEC 68-2-56 standard Cb test)

Mandatory: No mechanical or visible damage tolerated. Guaranty of functionalities after test.

Operation

Condition: Operating during test.

Cold: -10°C during 48h (IEC 68-2-1 standard Ab/Ad test)

Dry Heat: +55°C during 48h (IEC 68-2-2 standard Bb/Bd test)

Humidity: -10°C to +55°C at 95% R.H. 4 cycles (IEC 68-2-30 standard Nb test)

Mandatory: No mechanical or visible damage tolerated. Guaranty of functionalities during and after test.

The Wireless Antenna

The antenna sub-system and integration in the application is a major issue: Choice of antenna (type, length, performances, thermal resistance, etc.) These elements could affect GSM performances such as sensitivity and emitted power.

GSM, EDGE, and CDMA Antenna

The integrated modem antenna connector is a SMA connector. The SMA connector incorporates a 'Screw-on' action in order to make the connection easier while providing an excellent RF performance. An additional advantage is its small physical size, which is 50% of the standard MCX connector.
This type of connector is suitable for the standard ranges of flexible and semi-rigid cables. The characteristic impedance of the MMCX coaxial connector is 50 ohm. The antenna manufacturer must guarantee that the antenna will be working according to the radio characteristics presented in the table below.

GSM and E-GSM Radio Characteristics

	GSM 850	E-GSM 900	GSM 1800	GSM 1900
Frequency RX	869 to 894 MHz	925 to 960 MHz	1805 to 1880 MHz	1930 to 1990 MHz
Frequency TX	824 to 849 MHz	880 to 915 MHz	1710 to 1785 MHz	1850 to 1910 MHz
RF Power Stand	2W at 12.5% duty cycle	2W at 12.5% duty cycle	1W at 12.5% duty cycle	1W at 12.5% duty cycle
Impedance	50 ohms			
VSWR	<2			
Typical Radiated Gain	0 dBi on azimuth plane			

CDMA Radio Characteristics

	CDMA 800	CDMA 1900
Frequency RX	869 to 894 MHz	1930 to 1990 MHz
Frequency TX	824 to 849 MHz	1850 to 1910 MHz
Impedance	50 ohms	
VSWR	<2	
Typical Radiated Gain	0 dBi in at least one direction	

Antenna

An antenna that meets the requirements for use with the wireless product is included with your purchase.

Appendix C – Waste Electrical and Electronic Equipment Directive (WEEE)

Waste Electrical and Electronic Equipment (WEEE) Directive

The WEEE directive places an obligation on manufacturers, distributors and retailers to take-back electronic products at the end of their useful life. A sister Directive, ROHS (Restriction of Hazardous Substances), complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all Multi-Tech products being sold into the EU as of August 13, 2005. Manufacturers, distributors and retailers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of the user's waste equipment by handing it over to a designated collection point for the recycling of electrical and electronic waste equipment. The separate collection and recycling of waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the seller from whom you purchased the product.

06/27/2005

Glossary

A

AES
AES (Advanced Encryption Standard), also known as Rijndael, is a block cipher adopted as an encryption standard.

Authentication
The process of determining the identity of a user attempting to access a system and the process of verifying that a particular name really belongs to a particular entity.

Asynchronous
A method of transmitting data which allows characters to be sent at irregular intervals.

B

Baud Rate
Baud Rate refers to the bits per second (Bps) that are transmitted between your network device and modem or ISDN TA.

Blocked Cipher
Cipher that encrypts data in blocks of a fixed size: DES, IDEA, and SKIPJACK are block ciphers.

C

Client
A computing entity in a network that seeks service from other entities on the network. Client software generally resides on personal workstations and is used to contact network servers to retrieve information and perform other actives.

D

Data Encryption Standard (DES)
Block cipher that is widely used in commercial systems. It is a Federal standard so it is deemed acceptable by many financial institutions.

Data Key
Crypto key that encrypts data as opposed to a key that encrypts other keys. Also called a session key.

DHCP (Dynamic Host Configuration Protocol)
A protocol that was made to lessen the administrative burden of having to manually configure TCP/IP Hosts on a network. DHCP makes it possible for every computer on a network to extract its IP information from a DHCP server instead of having to be manually configured on each network computer. The DHCP server built-in to your RouteFinder allows every computer on your network to automatically extract IP information from the RouteFinder.
Why is it called Dynamic?
Each time a network client turns on their computer your RouteFinder DHCP server will automatically give them an IP address from the IP address pool configured in the DHCP Configuration dialog box in RouteFinder Web browser management interface. It is called Dynamic because the address that is issued could be different each time a computer connects to the network.

DNS (Domain Name System)
A DNS Server can be thought of as the computer at your ISP whose job is to take all the URLs that you type into your web browser and translate them to their corresponding IP address. To use the DNS translator, you need to know the IP address of your ISP's DNS Server.

Domain Name
The textual name assigned to a host on the Internet. The Domain Name Service (DNS) protocol translates between domain names and numerical IP addresses.

Dynamic Routing
Routing is the process of selecting the correct path for a message. Dynamic routing adjusts automatically to changes in network topologies or traffic.

E

Encryption
In general use, the transformation of data into a form unreadable by anyone without a secret decryption key. Its purpose is to ensure privacy by keeping the information hidden from anyone for whom it is not intended.

Ethernet
A LAN (Local Area Network) protocol developed by Xerox and DEC. It is a very commonly used type of LAN.

F

Filtering
An operating parameter used in LAN bridges and routers that when set will cause these devices to block the transfer of packets from one LAN to another.

Firewall
A system designed to prevent unauthorized access to or from a private network. Firewalls are typically installed to give users access to the Internet while protecting their Internal Information. Your RouteFinder uses a firewall technology known as NAT (see NAT). Each message entering or leaving the intranet passes through the firewall. The firewall examines each message and blocks those that do not meet the specified security criteria.

Firmware
Software that has been has been permanently or semi-permanently written to the RouteFinder's memory. Your RouteFinder supports flash ROM which means you can upgrade the firmware in your network device very easily by downloading a copy of the new firmware from the Multi-Tech Web site and using the RouteFinder Web browser management Firmware function.

FTP (File Transfer Protocol)
A protocol which allows a user on one host to access, and transfer files to and from another host over a network.

G

Gateway
An entrance and exit into a communications network.

I

IKE
Internet Key Exchange – a procedure by which the value of a key is shared between two or more parties.

IP (Internet Protocol)
The Internet Protocol is the network layer for the TCP/IP Protocol Suite. It is a connectionless, best-effort packet switching protocol.

IPSec
A collection of IP security measures that comprise an optional tunneling protocol for IPv6. IPSec supports authentication through an "authentication header" which is used to verify the validity of the originating address in the header of every packet of every packet stream.

Intranet
An Intranet is the use of Internet technologies within a company. Intranets are private networks that exist only within organizations, while the Internet is a global network open to all.

IP Addresses
A computer on the Internet is identified by an IP Address. A computer's IP address is like a telephone number. It identifies one address or in this case one computing device. Every computer or device on the network must have a different IP address. An IP address consists of four groups of numbers called octets, which are separated by periods. For example, 213 .0.0.1 is an IP address. An IP address consists of a network portion and a host portion. The network portion identifies the subnet that the computer belongs to. The host portion identifies the particular computer or node on that network.
IP addresses can either be dynamic (temporary) or static (permanent or fixed). A dynamic IP address is a temporary IP address that is assigned to you by a server (usually a DHCP server) when the computer is powered on. A static IP address is a permanent IP address that is set up on each individual computer. When your RouteFinder dials-up your ISP, your ISP can give it a fixed or dynamic IP address. Likewise, when you power on your computer, the RouteFinder can give your computer a dynamic or fixed IP address.

ISDN TA
(Integrated Services Digital Network Terminal Adapter) ISDN is a high speed digital telephone connection involving the digitization of the telephone network using existing wiring. An ISDN Terminal Adapter can be thought of as an ISDN Modem.

ISP (Internet Service Provider)
An organization that provides Internet services. An ISP is the company that provides the connection from your computer to the Internet. An ISP can offer a range of services, such as dial-up accounts, e-mail, web hosting or News.

L
LAN (Local Area Network)
A data network intended to serve an area of only a few square kilometers or less. This often means a small private network in companies.

M
ML-PPP (Also called MP or MPPP)
Stands for Multilink Point to Point Protocol and is an advancement of the PPP protocol that allows for the bridging or bundling of two ISDN or analog channels for faster connections.

MAC Address
The hardware address of a Device connected to a shared media. To find out the MAC address of your computer, please see Troubleshooting.

N
NAT Technology
NAT is short for Network Address Translation. NAT is an Internet standard that enables a local-area network to use one set of IP addresses for internal traffic and a second set of IP addresses for external traffic. The RouteFinder provides the necessary IP address translations. NAT is sometimes referred to as "IP Address Masquerading". This technology provides a type of firewall by hiding the internal IP addresses.
How does it work?
Every IP address on the Internet is a Registered or legal IP address. Therefore, no two IP addresses on the Internet are the same. For you to use your network device to access the Internet you need a registered IP address from your ISP (Internet Service Provider). Using a registered IP address on your Intranet or LAN is not necessary. When clients on your network start surfing the Internet, your RouteFinder will receive all the requests for information. The RouteFinder will dial-up your ISP and your ISP will give your RouteFinder a registered legal IP address. Your RouteFinder uses this IP address to request information saying, "send all information back to me at this IP address". In essence it appears as though all your clients requests are coming from that one IP address (hence the name IP masquerading). When all the information comes back through the RouteFinder, it sorts the data using an Address Translation Table and returns the data to the computer on your network that requested it. If someone on the Internet tries to access your network, the firewall function of the RouteFinder stops the request. The device will not reverse translate network addresses unless you have specifically allowed this feature using the Virtual Server function (IP Mapping).

Network Address
The network portion of an IP address. For a class A network, the network address is the first byte of the IP address. For a class B network, the network address is the first two bytes of the IP address. For a class C network, the network address is the first three bytes of the IP address. In each case, the remainder is the host address. In the Internet, assigned network addresses are globally unique.

P

Packet
A packet is a piece of a message transmitted over a packet-switching network. A packet contains the destination address of the message as well as the data. In IP networks, packets are often called datagrams.

PING
A program that tests whether a particular network destination on the Internet is online (that is, working) by bouncing a “signal” off a specified IP destination address.

Port Number
The term port can mean the connector on your computer or it can be thought of as a server number. Every service that travels over phone lines and modems has a standard port number. For example, the World Wide Web service uses the standard port number, 80 and the standard Telnet port is 23.
Port numbers are controlled and assigned by the IANA (Internet Assigned Numbers Authority). Most computers have a table in their systems containing a list of ports that have been assigned to specific services. You can also find lists of standard port numbers on the World Wide Web.

PPPoE
Point-to-point protocol over the Ethernet. It is a means of connecting from your premises to your Internet Service Provider. Its main advantage is that it determines the need for the ISP to manage the allocation of IP addresses.

PPTP
Point-to-Point Tunneling Protocol – An IP tunneling protocol designed to encapsulate the LAN protocols IPX and Apple Talk within IP for transmission across the Internet and other IP-based networks.

Private Key
Key used in public key crypto that belongs to an individual entity and must be kept secret.

Protocol
A formal description of message formats and the rules two computers must follow to exchange those messages. You can think of protocols like languages. If two computers or devices aren’t speaking the same language to each other, they won’t be able to communicate.

PPP (Point -to- Point Protocol)
PPP enables dial-up connections to the Internet and is the method that your network device connects to the Internet. PPP is more stable than the older SLIP protocol and provides error checking features.

R

Router
A device which forwards traffic between networks. If you request information from a location on your network or the Internet, the router will route the request to the appropriate destination. The router’s job is to listen for requests for IP addresses that are not part of your LAN and then route them to the appropriate network which may either be the Internet or another sub-network on your LAN.

S

Server
A provider of resources (e.g., file servers and name servers). For example, your RouteFinder provides Internet access and is, therefore, an Internet Access Server.

SSID
An SSID is the name of a wireless local area network (WLAN). All wireless devices on a WLAN must employ the same SSID in order to communicate with each other. SSIDs are case sensitive, consist of a sequence of alphanumeric characters (letters and numbers), and have a maximum length of 32 characters. Example: Multi-Tech.

Static Routing
Involves the selection of a route for data traffic on the basis of routing options preset by the network administrator.

Subnet
A portion of a network that shares a common address component. On TCP/IP networks, subnets are all devices whose IP Addresses have the same prefix. For example, all devices with IP addresses starting with 213.0.0 are part of the same subnet.

Subnet Mask / IP Address Mask
Subnet mask is what is used to determine what subnet an IP address belongs to. Subnetting enables the network administrator to further divide the host part of the address into two or more subnets.

T

TCP/IP (Transmission Control Protocol/Internet Protocol)
A suite of communication protocols used to connect hosts on the Internet. Every computer that wants to communicate with another computer on the Internet must use the TCP/IP protocol to transmit and route data packets. The format of an IP address is a 32-bit numeric address written as four octets separated by periods. Each number can be zero to 255. Within an isolated network, you can assign IP addresses at random as long as each one is unique. However, connecting a private network to the Internet requires using registered IP addresses to avoid duplication.
The four groups of numbers (octets) are used to identify a particular network and host on that network. The InterNIC assigns Internet addresses as Class A, Class B, or Class C. Class A supports 16 million hosts on each of 127 networks. Class B supports 65,000 hosts on each of 16,000 networks. Class C supports 254 hosts on each of 2 million networks. Due to the large increase in access to the Internet, new classless schemes are gradually replacing the system based on classes.

TKIP
TKIP (Temporal Key Integrity Protocol) is a security protocol used in Wi-Fi Protected Access (WPA).

Triple DES (3DES)
Cipher that applies the DES cipher three times with either two or three different DES keys.

Tunneling
As an Internet term, tunneling means to provide a secure temporary path over the Internet or other IP-based network in a VPN (Virtual Private Network) scenario. In this context, tunneling is the process of encapsulating an encrypted data packet in an IP packet for secure transmission across an inherently insecure IP network, such as the Internet.

U

UDP (User Datagram Protocol)
An Internet Standard transport layer protocol. It is a connectionless protocol that adds a level of reliability and multiplexing to IP.

V

Virtual Private Network
A private network built atop a public network. Hosts within the private network use encryption to talk to other hosts; the encryption excludes hosts from outside the private network even if they are on the public network.

W

WAN (Wide Area Network)
A network that connects host computers and sites across a wide geographical area.

WEP
WEP (Wired Equivalency Privacy) offers the privacy equivalent to that of a wired LAN. If activated, data is encrypted before transmission, and then the receiving station, such as an access point or another radio, performs decryption upon arrival of the data. 802.11 WEP encrypts data only between 802.11 stations.

WLAN (Wireless Local Area Network)
A LAN without wires.

WPA-PSK
Wi-Fi Protected Access (WPA and WPA2) is a class of systems to secure wireless (Wi-Fi) computer networks. WPA is designed for use with an IEEE 802.1x authentication server, which distributes different keys to each user. However, it can also be used in a less secure "pre-shared key" (PSK) mode, where every user is given the same passphrase. Pre-Shared Key mode (PSK, also known as personal mode) is designed fro home and small networks that cannot afford the cost and complexity of an 802.1x authentication server. Each user must enter a passphrase to access the network.

Index

8

802.11b/g specifications....16

A

Administration > Administrative Access....36
Administration > Factory Defaults....42
Administration > Remote Syslog....38
Administration > SNTP Client....39
Administration > System Logs....38
Administration > System Setup....34
Administration > Tools....41
Administrative Access....36
Advanced IP Settings....55
AES Definition....96
AH Key....70
Antenna....94
Antenna Characteristics....93
Antenna Connector....12
Approvals....14
Asynchronous Definition....96
AT Commands....8
Authentication....51
Authentication Algorithms....70
Authentication Definition....96
Auto Reboot Timer....35

B

Backup....79
Baud Rate CDMA....23
Baud Rate Definition....96
Baud Rate EDGE....23
Blocked Cipher Definition....96
Built-in 10/100 Switch....7

C

Cabling....17
CDMA & EDGE Back Panel....12
CDMA Front Panel....10
CDMA Specifications....15
Cellular Wireless Connectivity Options....7
Client Definition....96
Client Filter on WLAN....54
Connecting to the Internet....21
Continuous PING....41
Custom URL Filters....75

D

Data Encryption Standard (DES) Definition....96
Data Key Definition....96
Daylight Savings Time configuration....40
DDNS authentication....58
DDNS Client....41
DDNS force update....42
DDNS Server....58
DDNS Status....42
DHCP Definition....96
DHCP Server....77, 78
DHCP Server > LAN Fixed Addresses....78
DHCP Server > LAN Subnet Settings....77
DHCP Server > WLAN Fixed Addresses....78
DHCP Server > WLAN Subnet Settings....78
DHCP Server Live Log....82
Dial-on-Demand....23
Dial-up number CDMA....23
Dial-up number EDGE....23
Dimensions....14
Disable a Cellular Connection....23
DNAT....62
DNS Definition....96
DNS Proxy....76
Documentation....8
Domain Name Definition....96
Domain Name System Definition....96
Dynamic DNS....58
Dynamic DNS Client....7
Dynamic Host Configuration Protocol Definition....96
Dynamic IP Address....19
Dynamic Routing Definition....97

E

EDGE Front Panel....10
EDGE Specifications....15
Email Notification....34
Encryption....51, 52
Encryption Definition....97
Ethernet Definition....97
Ethernet ports caution....9

F

Factory Defaults....42
Features....6
File Transfer Protocol Definition....97
Filtering Definition....97
Firewall Definition....97
Firewall Features....14
Firmware Definition....97
Firmware Upgrade....79
Fixed IP Address....20
Flash Memory....33
FQDN....7
Front Panel....10
FTP Definition....97

G

Gateway Definition 97
Glossary 96

H

Handling Precautions 9
Handset Connector 12
HTTP port 37
HTTP Proxy 74
Humidity 14

I

ICMP 66
ICMP forwarding 66
ICMP on firewall 66
IKE Connection 68
IKE Definition 97
Inactivity Time Out 37
Independent Subnet for WLAN 50
Initialization String EDGE 23
Internet Protocol Definition 97
Intranet Definition 97
IP Addresses Definition 98
IP Aliases 55
IP Definition 97
IP Settings 47
IPSec 67
IPSec Definition 97
IPSec Live Log 82
ISDN TA Definition 98
ISP Internet Service Provider Definition 98

K

Keep-Alive URLs 57

L

LAN Definition 98
LAN Fixed Addresses 78
LAN Subnet Settings 77
LEDs 10
Local Area Network Definition 98
Log Traces 84
Login 21, 25
Logo on logon page 37

M

MAC address Definition 98
Management Features 14
Manual VPN Connection 70
Masquerading 60
Menu bar 26
ML-PPP Definition 98
modem backup 56
Modem LEDs 10
MP or MPPP Definition 98

N

NAT Technology Definition 98
Navigating the screens 26
Network Address Definition 99
Network Configuration 43
Network Interface Details Log 81
Network Registration 24
Network Setup > Advanced IP Settings 55
Network Setup > DNAT 62
Network Setup > Dynamic DNS 58
Network Setup > IP Masquerading 60
Network Setup > IP Settings 47
Network Setup > IP Settings > PPPoE 49
Network Setup > PPP Cellular/Analog Modem Backup 56
Network Setup > SNAT 61
Network Setup > Static Routes 60
Network Setup > Wireless LAN 50
Network Setup > Wireless LAN > WLAN Client Filter 54
Network Setup > Wireless LAN > WLAN Security 51
Networks & Services > Network Configuration 43, 44
Networks & Services > Services 45
Networks Entered Display on Other Screens .. 43

O

Open a Web browser 25

P

Packet Definition 99
Packet Filter > ICMP 41
Packet Filter Log 66
Packet Filter Logs 81
Packet Filters 63
Packet Filters > Advanced Filters 65
Packet Filters > ICMP 66
Packet Filters > Packet Filter Log 66
Packet Filters > Packet Filter Rules 63
Password Changing 37
Perfect Forward Secrecy 68
PING 41
PING Definition 99
PING to send packets continuously 41
Polling time 39
Port Number Definition 99
Ports 14
Power Requirements 14
PPP (Point -to- Point Protocol) Definition 99
PPP Cellular/Analog Log 83
PPP Cellular/Analog Modem Backup 56
PPP dial backup 32
PPP Setup 22
PPPoE 49
PPPoE Definition 99
PPTP 72
PPTP Definition 99
PPTP Live Log 82
Private Key Definition 99
Protocol
- AH 46
- ESP 46
- ICMP 46

TCP & UDP 46
Protocol Definition 99
Protocols 46
Proxy > Custom URL Filters 75
Proxy > DNS 41
Proxy > DNS Proxy 76
Proxy > HTTP Proxy 74

R

Radio Characteristics 94
Remote Syslog 38
Remote Syslog Host IP Address 38
Reset button 12
Reset the Modem 42
RF825-AP Cabling 18
RF825-AP Specifications 14
Roaming Status 24
Route configuration 60
Router Definition 99

S

Safe password 25
Save & Restart 33
Secure VPN Connections 7
Select encryption method 70
Server Definition 99
Service Configuration 45
Ship Kit 8
Signal strength 11
Signal Strength Verification 24
SNAT 61
SNTP Client 39
SNTP configuration 39
SSID Definition 99
Standards 14
Static Routes 60
Static Routing Definition 100
Stats & Logs > DHCP Server Live Log 82
Stats & Logs > IPSec Live Log 82
Stats & Logs > Log Traces 84
Stats & Logs > Network Interface Details 81
Stats & Logs > Packet Filter Logs 81
Stats & Logs > PPP Cellular/Analog Log 83
Stats & Logs > PPTP Live Log 82
Stats & Logs > System Information 80
Stats & Logs > WLAN Client Live Log 83
Sub-Menus 27
Subnet Addresses 91
Subnet Definition 100
Subnet Mask Definition 100
Supported Subnet Addresses 91
System Information Log 80
System Logs 38
System Setup 34

T

TCP/IP Communication 19
TCP/IP Definition 100
Temperature 14
Time Before Automatic Disconnect 37
Time zone configuration 40
TKIP Definition 100
Tools 41
Trace Route 42
Triple DES (3DES) Definition 100
Tunneling Definition 100

U

UDP (User Datagram Protocol) Definition 100
User Authentication Local 73
User Authentication RADIUS 73
User Defined Packet Filter Rules 63
Using the Wizard Setup 29, 38
Utilities > Backup 79
Utilities > Firmware Upgrade 79

V

Version number on logon page 37
violating the configured security policy log 81
Virtual Private Network Definition 100
VPN > IPSec 67
VPN > IPSec > Add a Manual Connection 70
VPN > IPSec > Add IKE Connection 68
VPN > PPTP 72
VPN Features 14

W

WAN Definition 100
Warranty 14
Web Management software 21
Weight 14
WEP Definition 100
Wi-Fi Connectivity Option 7
WINS Server 55
Wireless LAN 50
Wireless LAN – WLAN Security 51
Wizard Setup 28, 30
Wizard Setup Screen 29
WLAN Client Live Log 83
WLAN Definition 101
WLAN Fixed Addresses 78
WLAN Subnet Settings 78
WPA-PSK Definition 101